Body Builders Layout Book

MEDIUM DUTY
WHAT'S NEW

- Air compressor option now available on 7.3L gasoline engine for air brakes and other air driven accessories (late availability)
- Air tank locations move outboard 1"
- Updated Mobile Mode Guidance- Resistor must be installed in circuit for maximum rpm limit
- Customer configurable SEIC ramp rates using IDS service tool
- Updated SEIC and Customer Access wiring circuits and colors
- Updated ADAS file of view guidance
- Added California Green House Gas Emission (CGH) reference
- Added wheelbase modification guidelines for Electronic Stability Control (ESC)
- Updated Air Brake schematics
- 7.3L Gas exhaust location changes

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WARNING:
During the production and servicing of these vehicles, due care should be taken to avoid damaging of safety or emissions related systems such as the braking system, fuel lines, sensors, catalysts, etc. through contacting them while working on adjacent areas of the vehicle. Inadvertent damage can also occur due to adjacent welding/cutting operations, people standing near/on unprotected systems while performing other tasks.

Introduction

Important Notices

The information described herein is believed to be correct at the time of publication, but accuracy cannot be guaranteed. Ford reserves the right to discontinue models or change specifications or designs at any time without notice and without incurring any obligation.

Representations regarding the compliance of any Ford-manufactured incomplete vehicle to any rule, regulation or standard issued pursuant to the National Traffic and Motor Vehicle Safety Act or the Canadian Motor Vehicle Safety Act are set forth only in the Incomplete Vehicle Manual (IVM) which accompanies each incomplete vehicle.

Regulations such as those issued by the Federal Highway Administration (FHA) or issued pursuant to the Occupational Safety and Health Act (OSHA), and/or state, provincial, and local laws and regulations may require installation of additional equipment for the particular use intended for the vehicle. It is the responsibility of the subsequent stage manufacturer or completed vehicle alterer and the vehicle purchaser to ascertain how the vehicle will ultimately be used, if FHA, OSHA or state provincial or local regulations apply and how the vehicle as completed will comply with those requirements. Nothing contained herein is to be construed as a representation that such equipment required for the particular use intended has been installed on the completed or incomplete vehicle.

Reference Information

Ford Body Builder Advisory Service Publications

This document is an example of a program-specific Body Builders Layout Book (BBLB) published by the Ford Body Builder Advisory Service (BBAS) team. Each Ford Commercial Truck vehicle line has a similar document that aims to provide detailed information which may be of interest to a subsequent-stage manufacturer or alterer.

The Ford Transit and Transit Connect also have a Body and Equipment Mounting Manual (BEMM), which is a comprehensive resource dedicated to body and equipment mounting information.

Yet another source of program-specific information are the "Vehicle Specification" documents available on the Ford BBAS website. Information typically found in these documents are: vehicle curb and accessory weights, vehicle dimensions, component descriptions, capacities, GAWRs, alternator output, powertrain output and gear ratios.

In addition to the program-specific documents, there are several Ford BBLB documents that contain general best practices or information on specific subjects that span multiple vehicle lines. These include:

- General BBLB - contains Definitions, Design Recommendations and Vehicle Storage Guidelines.
- Snow Plow BBLB
- Pickup Box Removal BBLB

These publications are updated every model year and can be accessed via the web at https://fordbbas.com under "Publications". For BBLB and BEMM documents, expand the "Body Builder Layout Book" Section to view all available documents. For Vehicle Specifications, expand the "Vehicle Specifications" section. The website search function can be used to filter for specific content or vehicle line.

Ford Body Builder Advisory Service Bulletins

Occasionally, the Ford BBAS team will create an SVE "Bulletin" to address a specific issue or distribute important information in a timely manner. These documents can be accessed via the web at https://fordbbas.com under "Bulletins". The website search function can be used to filter for specific content or vehicle line.

If applicable, information from each SVE bulletin will be incorporated into the appropriate BBLB document the following model year. In some cases, SVE bulletins will continue to be referenced in this document.

Ford Body Builder Advisory Service Contact

The Ford Truck Body Builder Advisory Service may be consulted if questions regarding the completion of Ford commercial vehicles are not adequately addressed in the documentation described above. For assistance call (877) 840-4338 or e-mail via the web at https://fordbbas.com under "Contact Us" and select "General Questions".

For Ford vehicle CAD requests, please visit https://fordbbas.com, select "Contact Us" and then "CAD Request".

For both Questions and CAD Requests, please be as specific as possible with the request details to assure the most accurate and timely response.

Ford Service Publications

Ford Service Technical Resources (including wiring diagrams, repair manuals and diagnostic tool support) are available by subscription via the Motorcraft website: www.motorcraftservice.com

The following publications are examples of digital and printed manuals which are available from Helm Incorporated; call 1-800-782-4356 or contact Helm, Inc. at their website www.helminc.com:

- Ford Truck Shop Manuals
- Ford Towing Manuals
- Ford Wiring Diagrams

F650/750 SUPER DUTY
MODEL LINEUP - DIESEL ENGINE
REGULAR CAB

SUPER DUTY REGULAR CAB	WHEELBASE Inches	CA Inches	AF Inches	GVWR pounds	FRONT CURB Wt pounds	REAR CURB Wt pounds	BASE CURB Wt pounds	COMMENTS
F-650 Straight Frame/Hydraulic	158	84	49	26,000	6218	3451	9669	534 Frame 12.64 SM / 50 KSI
F-650 Straight Frame/Hydraulic	176	102	70	26,000	6272	3509	9780	
F-650 Straight Frame/Hydraulic	182	108	70	26,000	6290	3528	9817	
F-650 Straight Frame/Hydraulic	194	120	75	26,000	6326	3566	9891	
F-650 Straight Frame/Hydraulic	200	126	75	26,000	6344	3585	9928	
F-650 Straight Frame/Hydraulic	212	138	81	26,000	6379	3623	10002	
F-650 Straight Frame/Hydraulic	218	144	81	26,000	6397	3642	10039	
F-650 Straight Frame/Hydraulic	224	150	87	26,000	6415	3661	10076	
F-650 Straight Frame/Hydraulic	230	156	87	26,000	6433	3680	10113	
F-650 Straight Frame/Hydraulic	242	168	100	26,000	6469	3718	10187	
F-650 Straight Frame/Hydraulic	260	186	120	26,000	6523	3775	10298	
F-650 Straight Frame/Hydraulic	281	207	120	26,000	6815	3944	10759	538 Frm - 16.98 SM 120 KSI
F-650 Straight Frame/Air	158	84	49	26,000	6466	3631	10097	534 Frame 12.64 SM / 50 KSI
F-650 Straight Frame/Air	176	102	70	26,000	6519	3688	10207	
F-650 Straight Frame/Air	182	108	70	26,000	6537	3707	10244	
F-650 Straight Frame/Air	194	120	75	26,000	6573	3745	10318	
F-650 Straight Frame/Air	200	126	75	26,000	6591	3764	10355	
F-650 Straight Frame/Air	212	138	81	26,000	6627	3803	10430	
F-650 Straight Frame/Air	218	144	81	26,000	6645	3822	10467	
F-650 Straight Frame/Air	224	150	87	26,000	6663	3841	10504	
F-650 Straight Frame/Air	230	156	87	26,000	6681	3860	10541	
F-650 Straight Frame/Air	242	168	100	26,000	6717	3898	10615	
F-650 Straight Frame/Air	260	186	120	26,000	6771	3955	10726	
F-650 Straight Frame/Air	281	207	120	26,000	7062	4124	11186	538 Frm - 16.98 SM 120 KSI
F-650 Kick-Up (ProLoader)/Hyd	158	84	63	22,000	5869	3538	9407	533 Frame 10.75 SM / 80 KSI
F-650 Kick-Up (ProLoader)/Hyd	182	108	75	22,000	5919	3592	9511	
F-650 Kick-Up (ProLoader)/Hyd	194	120	75	22,000	5933	3607	9545	
F-650 Kick-Up (ProLoader)/Hyd	218	144	81	22,000	5974	3655	9628	
F-650 Kick-Up (ProLoader)/Hyd	242	168	100	22,000	6064	3749	9813	
F-650 Kick-Up (ProLoader)/Air	158	84	63	22,000	6117	3718	9834	533 Frame 10.75 SM / 80 KSI
F-650 Kick-Up (ProLoader)/Air	182	108	75	22,000	6167	3772	9938	
F-650 Kick-Up (ProLoader)/Air	194	120	75	22,000	6181	3787	9972	
F-650 Kick-Up (ProLoader)/Air	218	144	81	22,000	6222	3835	10055	
F-650 Kick-Up (ProLoader)/Air	242	168	100	22,000	6312	3929	10240	
F-650 Tractor	146	72	39	27,500	6473	3594	10067	536 Frame 14.18 SM / 120 KSI
F-650 Tractor	158	84	39	27,500	6521	3620	10141	

F650/750 SUPER DUTY
MODEL LINEUP - DIESEL ENGINE
REGULAR CAB (cont'd)

SUPER DUTY REGULAR CAB	WHEELBASE Inches	CA Inches	AF Inches	GVWR pounds	FRONT CURB Wt pounds	REAR CURB Wt pounds	BASE CURB Wt pounds	COMMENTS
F-750 Straight Frame/Hydraulic	158	84	49	31,000	6294	3746	10040	535 Frame 15.14 SM / 80 KSI
F-750 Straight Frame/Hydraulic	176	102	70	31,000	6371	3808	10179	
F-750 Straight Frame/Hydraulic	182	108	70	31,000	6397	3828	10225	
F-750 Straight Frame/Hydraulic	194	120	75	31,000	6448	3870	10318	
F-750 Straight Frame/Hydraulic	200	126	75	31,000	6474	3891	10365	
F-750 Straight Frame/Hydraulic	212	138	81	31,000	6525	3932	10457	
F-750 Straight Frame/Hydraulic	218	144	81	31,000	6551	3953	10504	
F-750 Straight Frame/Hydraulic	224	150	87	31,000	6577	3973	10550	
F-750 Straight Frame/Hydraulic	230	156	87	31,000	6602	3994	10596	
F-750 Straight Frame/Hydraulic	242	168	100	31,000	6654	4036	10690	
F-750 Straight Frame/Hydraulic	260	186	120	31,000	6731	4096	10827	
F-750 Straight Frame/Hydraulic	281	207	120	31,000	6890	4193	11083	538 Frm - 16.98 SM 120 KSI
F-750 Straight Frame/Air	158	84	49	31,000	6556	3847	10413	535 Frame 15.14 SM / 80 KSI
F-750 Straight Frame/Air	176	102	70	31,000	6643	3910	10552	
F-750 Straight Frame/Air	182	108	70	31,000	6668	3930	10598	
F-750 Straight Frame/Air	194	120	75	31,000	6720	3972	10691	
F-750 Straight Frame/Air	200	126	75	31,000	6745	3992	10738	
F-750 Straight Frame/Air	212	138	81	31,000	6797	4034	10830	
F-750 Straight Frame/Air	218	144	81	31,000	6823	4055	10877	
F-750 Straight Frame/Air	224	150	87	31,000	6848	4075	10923	
F-750 Straight Frame/Air	230	156	87	31,000	6874	4096	10970	
F-750 Straight Frame/Air	242	168	100	31,000	6925	4137	11062	
F-750 Straight Frame/Air	260	186	120	31,000	7003	4198	11201	
F-750 Straight Frame/Air	281	207	120	31000	7162	4295	11456	538 Frm - 16.98 SM 120 KSI
F-750 Tractor	146	72	39	31,000	6473	3714	10187	536 Frame 14.18 SM / 120 KSI
F-750 Tractor	158	84	39	31,000	6521	3740	10261	

F650/750 SUPER DUTY
MODEL LINEUP - DIESEL ENGINE
SUPER CAB

SUPER DUTY SUPER CAB	WHEELBASE Inches	CA Inches	AF Inches	GVWR pounds	FRONT CURB Wt pounds	REAR CURB Wt pounds	BASE CURB Wt pounds	COMMENTS
F-650 Straight Frame/Hydraulic	179	84	49	26,000	6506	3630	10136	534 Frame 12.64 SM / 50 KSI
F-650 Straight Frame/Hydraulic	197	102	70	26,000	6615	3645	10260	
F-650 Straight Frame/Hydraulic	203	108	70	26,000	6651	3650	10301	
F-650 Straight Frame/Hydraulic	215	120	75	26,000	6724	3660	10384	
F-650 Straight Frame/Hydraulic	221	126	75	26,000	6760	3665	10425	
F-650 Straight Frame/Hydraulic	233	138	81	26,000	6832	3675	10507	
F-650 Straight Frame/Hydraulic	239	144	81	26,000	6868	3681	10549	
F-650 Straight Frame/Hydraulic	245	150	87	26,000	6905	3685	10590	
F-650 Straight Frame/Hydraulic	251	156	87	26,000	6941	3691	10632	
F-650 Straight Frame/Hydraulic	263	168	100	26,000	7013	3701	10714	
F-650 Straight Frame/Hydraulic	281	186	120	26,000	7311	3858	11169	538 Frm - 16.98 SM 120 KSI
F-650 Straight Frame/Air	179	84	49	26,000	6754	3810	10564	534 Frame 12.64 SM / 50 KSI
F-650 Straight Frame/Air	197	102	70	26,000	6862	3824	10686	
F-650 Straight Frame/Air	203	108	70	26,000	6899	3829	10728	
F-650 Straight Frame/Air	215	120	75	26,000	6971	3840	10811	
F-650 Straight Frame/Air	221	126	75	26,000	7007	3845	10852	
F-650 Straight Frame/Air	233	138	81	26,000	7080	3855	10935	
F-650 Straight Frame/Air	239	144	81	26,000	7116	3861	10977	
F-650 Straight Frame/Air	245	150	87	26,000	7152	3865	11017	
F-650 Straight Frame/Air	251	156	87	26,000	7188	3870	11058	
F-650 Straight Frame/Air	263	168	100	26,000	7261	3880	11141	
F-650 Straight Frame/Air	281	186	120	26,000	7558	4038	11596	538 Frm - 16.98 SM 120 KSI
F-650 Kick-Up (ProLoader)/Hyd	179	84	63	22,000	6079	3605	9684	533 Frame 10.75 SM / 80 KSI
F-650 Kick-Up (ProLoader)/Hyd	203	108	75	22,000	6120	3646	9766	
F-650 Kick-Up (ProLoader)/Hyd	239	144	81	22,000	6186	3718	9904	
F-650 Kick-Up (ProLoader)/Air	179	84	63	22,000	6327	3785	10112	533 Frame 10.75 SM / 80 KSI
F-650 Kick-Up (ProLoader)/Air	203	108	75	22,000	6368	3826	10194	
F-650 Kick-Up (ProLoader)/Air	239	144	81	22,000	6434	3898	10332	
F-650 Tractor	167	72	39	27,500	6763	3756	10519	536 Frame 14.18 SM / 120 KSI
F-650 Tractor	179	84	39	27,500	6823	3788	10611	

F650/750 SUPER DUTY
MODEL LINEUP - DIESEL ENGINE
SUPER CAB (Cont’d)

SUPER DUTY SUPER CAB	WHEELBASE Inches	CA Inches	AF Inches	GVWR pounds	FRONT CURB Wt pounds	REAR CURB Wt pounds	BASE CURB Wt pounds	COMMENTS
F-750 Straight Frame/Hydraulic	179	84	49	31,000	6609	3930	10539	535 Frame 15.14 SM / 80 KSI
F-750 Straight Frame/Hydraulic	197	102	70	31,000	6741	3950	10691	
F-750 Straight Frame/Hydraulic	203	108	70	31,000	6785	3956	10741	
F-750 Straight Frame/Hydraulic	215	120	75	31,000	6873	3969	10842	
F-750 Straight Frame/Hydraulic	221	126	75	31,000	6917	3976	10893	
F-750 Straight Frame/Hydraulic	233	138	81	31,000	7005	3999	11004	
F-750 Straight Frame/Hydraulic	239	144	81	31,000	7049	3997	11046	
F-750 Straight Frame/Hydraulic	245	150	87	31,000	7093	4003	11096	
F-750 Straight Frame/Hydraulic	251	156	87	31,000	7137	4009	11146	
F-750 Straight Frame/Hydraulic	263	168	100	31,000	7225	4023	11248	
F-750 Straight Frame/Hydraulic	281	186	120	31,000	7357	4043	11400	
F-750 Straight Frame/Air	179	84	49	31,000	6881	4032	10912	535 Frame 15.14 SM / 80 KSI
F-750 Straight Frame/Air	197	102	70	31,000	7013	4052	11064	
F-750 Straight Frame/Air	203	108	70	31,000	7057	4058	11115	
F-750 Straight Frame/Air	215	120	75	31,000	7145	4071	11216	
F-750 Straight Frame/Air	221	126	75	31,000	7189	4078	11267	
F-750 Straight Frame/Air	233	138	81	31,000	7277	4101	11378	
F-750 Straight Frame/Air	239	144	81	31,000	7321	4099	11419	
F-750 Straight Frame/Air	245	150	87	31,000	7365	4105	11470	
F-750 Straight Frame/Air	251	156	87	31,000	7409	4111	11520	
F-750 Straight Frame/Air	263	168	100	31,000	7497	4125	11622	
F-750 Straight Frame/Air	281	186	120	31,000	7629	4145	11773	
F-750 Tractor	167	72	39	31,000	6763	3756	10519	536 Frame 14.18 SM / 120 KSI
F-750 Tractor	179	84	39	31,000	6823	3788	10611	

F650/750 SUPER DUTY
MODEL LINEUP - DIESEL ENGINE
CREW CAB

SUPER DUTY CREW CAB	WHEELBASE Inches	CA Inches	AF Inches	GVWR pounds	FRONT CURB Wt pounds	REAR CURB Wt pounds	BASE CURB Wt pounds	COMMENTS
F-650 Straight Frame/Hydraulic	182	72	49	26,000	7016	3370	10386	534 Frame 12.64 SM / 50 KSI
F-650 Straight Frame/Hydraulic	194	84	49	26,000	7037	3447	10484	
F-650 Straight Frame/Hydraulic	212	102	70	26,000	7069	3563	10632	
F-650 Straight Frame/Hydraulic	218	108	70	26,000	7079	3602	10681	
F-650 Straight Frame/Hydraulic	230	120	75	26,000	7100	3679	10779	
F-650 Straight Frame/Hydraulic	236	126	75	26,000	7111	3718	10829	
F-650 Straight Frame/Hydraulic	248	136	81	26,000	7132	3796	10928	
F-650 Straight Frame/Hydraulic	254	144	81	26,000	7142	3834	10976	
F-650 Straight Frame/Hydraulic	260	150	87	26,000	7153	3873	11026	
F-650 Straight Frame/Hydraulic	266	156	87	26,000	7163	3912	11075	
F-650 Straight Frame/Hydraulic	278	168	100	26,000	7184	3989	11173	
F-650 Straight Frame/Air	182	72	49	26,000	7264	3550	10814	534 Frame 12.64 SM / 50 KSI
F-650 Straight Frame/Air	194	84	49	26,000	7285	3625	10910	
F-650 Straight Frame/Air	212	102	70	26,000	7317	3743	11060	
F-650 Straight Frame/Air	218	108	70	26,000	7327	3782	11109	
F-650 Straight Frame/Air	230	120	75	26,000	7348	3859	11207	
F-650 Straight Frame/Air	236	126	75	26,000	7359	3898	11257	
F-650 Straight Frame/Air	248	136	81	26,000	7380	3975	11355	
F-650 Straight Frame/Air	254	144	81	26,000	7390	4014	11404	
F-650 Straight Frame/Air	260	150	87	26,000	7401	4053	11454	
F-650 Straight Frame/Air	266	156	87	26,000	7411	4091	11502	
F-650 Straight Frame/Air	278	168	100	26,000	7432	4169	11601	
F-650 Kick-Up (ProLoader)/Hyd	194	84	63	22,000	6248	3641	9889	533 Frame 10.75 SM / 80 KSI
F-650 Kick-Up (ProLoader)/Hyd	218	108	75	22,000	6283	3679	9962	
F-650 Kick-Up (ProLoader)/Hyd	254	144	96	22,000	6393	3793	10186	
F-650 Kick-Up (ProLoader)/Air	194	84	63	22,000	6496	3821	10317	533 Frame 10.75 SM / 80 KSI
F-650 Kick-Up (ProLoader)/Air	218	108	75	22,000	6531	3859	10390	
F-650 Kick-Up (ProLoader)/Air	254	144	96	22,000	6641	3973	10614	
F-650 Tractor	182	72	39	27,500	6984	3878	10862	536 Frm - 14.18 SM 120 KSI

F650/750 SUPER DUTY
MODEL LINEUP - DIESEL ENGINE
CREW CAB (cont'd)

SUPER DUTY CREW CAB	WHEELBASE Inches	CA Inches	AF Inches	GVWR pounds	FRONT CURB Wt pounds	REAR CURB Wt pounds	BASE CURB Wt pounds	COMMENTS
F-750 Straight Frame/Hydraulic	182	72	49	31,000	7011	4083	11094	535 Frame 15.14 SM / 80 KSI
F-750 Straight Frame/Hydraulic	194	84	49	31,000	7048	4108	11156	
F-750 Straight Frame/Hydraulic	212	102	70	31,000	7103	4146	11249	
F-750 Straight Frame/Hydraulic	218	108	70	31,000	7121	4159	11280	
F-750 Straight Frame/Hydraulic	230	120	75	31,000	7158	4184	11342	
F-750 Straight Frame/Hydraulic	236	126	75	31,000	7177	4197	11374	
F-750 Straight Frame/Hydraulic	248	136	81	31,000	7214	4222	11436	
F-750 Straight Frame/Hydraulic	254	144	81	31,000	7232	4234	11466	
F-750 Straight Frame/Hydraulic	260	150	87	31,000	7251	4248	11499	
F-750 Straight Frame/Hydraulic	266	156	87	31,000	7269	4261	11530	
F-750 Straight Frame/Hydraulic	278	168	100	31,000	7306	4286	11592	
F-750 Straight Frame/Air	182	72	49	31,000	7283	4185	11468	535 Frame 15.14 SM / 80 KSI
F-750 Straight Frame/Air	194	84	49	31,000	7320	4210	11530	
F-750 Straight Frame/Air	212	102	70	31,000	7375	4248	11623	
F-750 Straight Frame/Air	218	108	70	31,000	7393	4260	11653	
F-750 Straight Frame/Air	230	120	75	31,000	7430	4286	11716	
F-750 Straight Frame/Air	236	126	75	31,000	7449	4298	11747	
F-750 Straight Frame/Air	248	136	81	31,000	7486	4324	11810	
F-750 Straight Frame/Air	254	144	81	31,000	7504	4336	11840	
F-750 Straight Frame/Air	260	150	87	31,000	7523	4350	11873	
F-750 Straight Frame/Air	266	156	87	31,000	7541	4362	11903	
F-750 Straight Frame/Air	278	168	100	31,000	7578	4388	11966	
F-750 Tractor	182	72	39	31,000	6984	3998	10982	536 Frm - 14.18 SM 120 KSI

F650/750 SUPER DUTY
MODEL LINEUP - GASOLINE ENGINE
REGULAR CAB

SUPER DUTY REGULAR CAB	WHEELBASE Inches	CA Inches	AF Inches	GVWR pounds	FRONT CURB Wt pounds	REAR CURB Wt pounds	BASE CURB Wt pounds	COMMENTS
F-650 Straight Frame	158	84	49	26,000	5501	3411	8912	534 Frame 12.64 SM / 50 KSI
F-650 Straight Frame	176	102	70	26,000	5558	3470	9028	
F-650 Straight Frame	182	108	70	26,000	5577	3489	9066	
F-650 Straight Frame	194	120	75	26,000	5615	3529	9144	
F-650 Straight Frame	200	126	75	26,000	5634	3548	9182	
F-650 Straight Frame	212	138	81	26,000	5673	3587	9260	
F-650 Straight Frame	218	144	81	26,000	5692	3607	9299	
F-650 Straight Frame	224	150	87	26,000	5711	3626	9337	
F-650 Straight Frame	230	156	87	26,000	5730	3646	9376	
F-650 Straight Frame	242	168	100	26,000	5768	3685	9453	
F-650 Straight Frame	260	186	120	26,000	5825	3743	9568	
F-650 Straight Frame	281	207	120	26,000	6115	3894	10009	538 Frm - 16.98 SM 120 KSI
F-650 Kick-Up (ProLoader)	158	84	63	22,000	5458	3290	8748	533 Frame 10.75 SM / 80 KSI
F-650 Kick-Up (ProLoader)	182	108	75	22,000	5508	3344	8852	
F-650 Kick-Up (ProLoader)	194	120	75	22,000	5525	3362	8887	
F-650 Kick-Up (ProLoader)	218	144	81	22,000	5563	3407	8970	
F-650 Kick-Up (ProLoader)	242	168	100	22,000	5653	3501	9154	
F-750 Straight Frame	158	84	49	31,000	5635	3604	9239	535 Frame 15.14 SM / 80 KSI
F-750 Straight Frame	176	102	70	31,000	5651	3716	9367	
F-750 Straight Frame	182	108	70	31,000	5670	3739	9409	
F-750 Straight Frame	194	120	75	31,000	5708	3785	9493	
F-750 Straight Frame	200	126	75	31,000	5727	3809	9536	
F-750 Straight Frame	212	138	81	31,000	5765	3855	9620	
F-750 Straight Frame	218	144	81	31,000	5784	3879	9663	
F-750 Straight Frame	224	150	87	31,000	5803	3902	9705	
F-750 Straight Frame	230	156	87	31,000	5919	3828	9747	
F-750 Straight Frame	242	168	100	31,000	5860	3972	9832	
F-750 Straight Frame	260	186	120	31,000	5959	4000	9959	
F-750 Straight Frame	281	207	120	31,000	6190	4143	10333	538 Frm - 16.98 SM 120 KSI

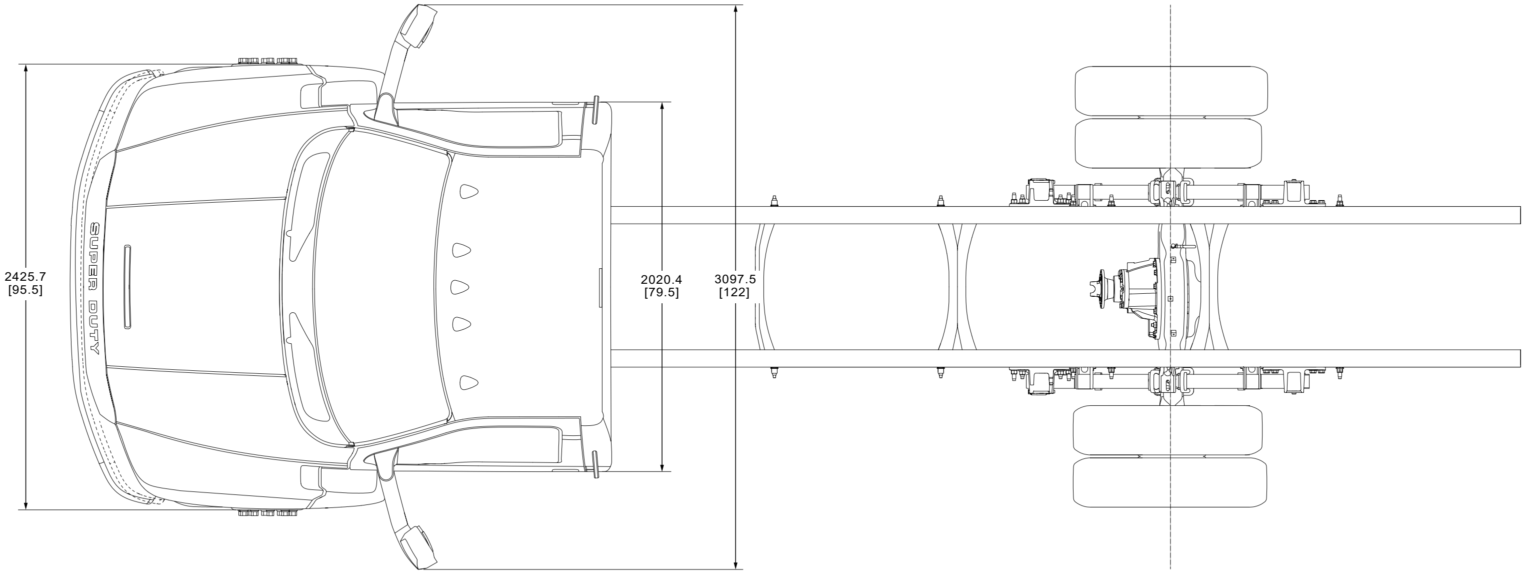
F650/750 SUPER DUTY
MODEL LINEUP - GASOLINE ENGINE
SUPER CAB

SUPER DUTY SUPER CAB	WHEELBASE Inches	CA Inches	AF Inches	GVWR pounds	FRONT CURB Wt pounds	REAR CURB Wt pounds	BASE CURB Wt pounds	COMMENTS
F-650 Straight Frame	179	84	49	26,000	5849	3551	9400	534 Frame 12.64 SM / 50 KSI
F-650 Straight Frame	197	102	70	26,000	5905	3611	9516	
F-650 Straight Frame	203	108	70	26,000	5924	3631	9555	
F-650 Straight Frame	215	120	75	26,000	5982	3689	9671	
F-650 Straight Frame	221	126	75	26,000	6001	3708	9709	
F-650 Straight Frame	233	138	81	26,000	6020	3728	9748	
F-650 Straight Frame	239	144	81	26,000	6034	3743	9777	
F-650 Straight Frame	245	150	87	26,000	6058	3767	9825	
F-650 Straight Frame	251	156	87	26,000	6082	3791	9873	
F-650 Straight Frame	263	168	100	26,000	6115	3826	9941	
F-650 Straight Frame	281	186	120	26,000	6315	4104	10419	538 Frm - 16.98 SM 120 KSI
F-650 Kick-Up (ProLoader)	179	84	63	22,000	5668	3357	9025	533 Frame 10.75 SM / 80 KSI
F-650 Kick-Up (ProLoader)	203	108	75	22,000	5710	3399	9109	
F-650 Kick-Up (ProLoader)	239	144	81	22,000	5775	3470	9245	
F-750 Straight Frame	179	84	49	31,000	5892	3846	9738	535 Frame 15.14 SM / 80 KSI
F-750 Straight Frame	197	102	70	31,000	5998	3867	9865	
F-750 Straight Frame	203	108	70	31,000	6033	3875	9908	
F-750 Straight Frame	215	120	75	31,000	6103	3890	9993	
F-750 Straight Frame	221	126	75	31,000	6138	3897	10035	
F-750 Straight Frame	233	138	81	31,000	6209	3910	10119	
F-750 Straight Frame	239	144	81	31,000	6255	3920	10175	
F-750 Straight Frame	245	150	87	31,000	6279	3925	10204	
F-750 Straight Frame	251	156	87	31,000	6323	3928	10251	
F-750 Straight Frame	263	168	100	31,000	6384	3947	10331	
F-750 Straight Frame	281	186	120	31,000	6476	3975	10451	538 Frm - 16.98 SM 120 KSI

F650/750 SUPER DUTY
MODEL LINEUP - GASOLINE ENGINE
CREW CAB

SUPER DUTY CREW CAB	WHEELBASE Inches	CA Inches	AF Inches	GVWR pounds	FRONT CURB Wt pounds	REAR CURB Wt pounds	BASE CURB Wt pounds	COMMENTS
F-650 Straight Frame	182	72	49	26,000	6085	3616	9701	534 Frame 12.64 SM / 50 KSI
F-650 Straight Frame	194	84	49	26,000	6123	3657	9780	
F-650 Straight Frame	212	102	70	26,000	6181	3715	9896	
F-650 Straight Frame	218	108	70	26,000	6200	3734	9934	
F-650 Straight Frame	230	120	75	26,000	6238	3773	10011	
F-650 Straight Frame	236	126	75	26,000	6262	3797	10059	
F-650 Straight Frame	248	136	81	26,000	6300	3837	10137	
F-650 Straight Frame	254	144	81	26,000	6309	3847	10156	
F-650 Straight Frame	260	150	87	26,000	6333	3872	10205	
F-650 Straight Frame	266	156	87	26,000	6357	3895	10252	
F-650 Straight Frame	278	168	100	26,000	6405	3943	10348	
F-650 Kick-Up (ProLoader)	194	84	63	22,000	5537	3393	9230	533 Frame 10.75 SM / 80 KSI
F-650 Kick-Up (ProLoader)	218	108	75	22,000	5872	3431	9303	
F-650 Kick-Up (ProLoader)	254	144	96	22,000	5982	3545	9527	
F-750 Straight Frame	182	72	49	31,000	6145	3898	10043	535 Frame 15.14 SM / 80 KSI
F-750 Straight Frame	194	84	49	31,000	6216	3912	10128	
F-750 Straight Frame	212	102	70	31,000	6321	3935	10256	
F-750 Straight Frame	218	108	70	31,000	6357	3942	10299	
F-750 Straight Frame	230	120	75	31,000	6427	3955	10382	
F-750 Straight Frame	236	126	75	31,000	6451	3979	10430	
F-750 Straight Frame	248	136	81	31,000	6521	3993	10514	
F-750 Straight Frame	254	144	81	31,000	6578	3967	10545	
F-750 Straight Frame	260	150	87	31,000	6602	3991	10593	
F-750 Straight Frame	266	156	87	31,000	6626	4017	10643	
F-750 Straight Frame	278	168	100	31,000	6674	4069	10743	

F650/750 SUPER DUTY
DIMENSIONAL DATA
REGULAR CAB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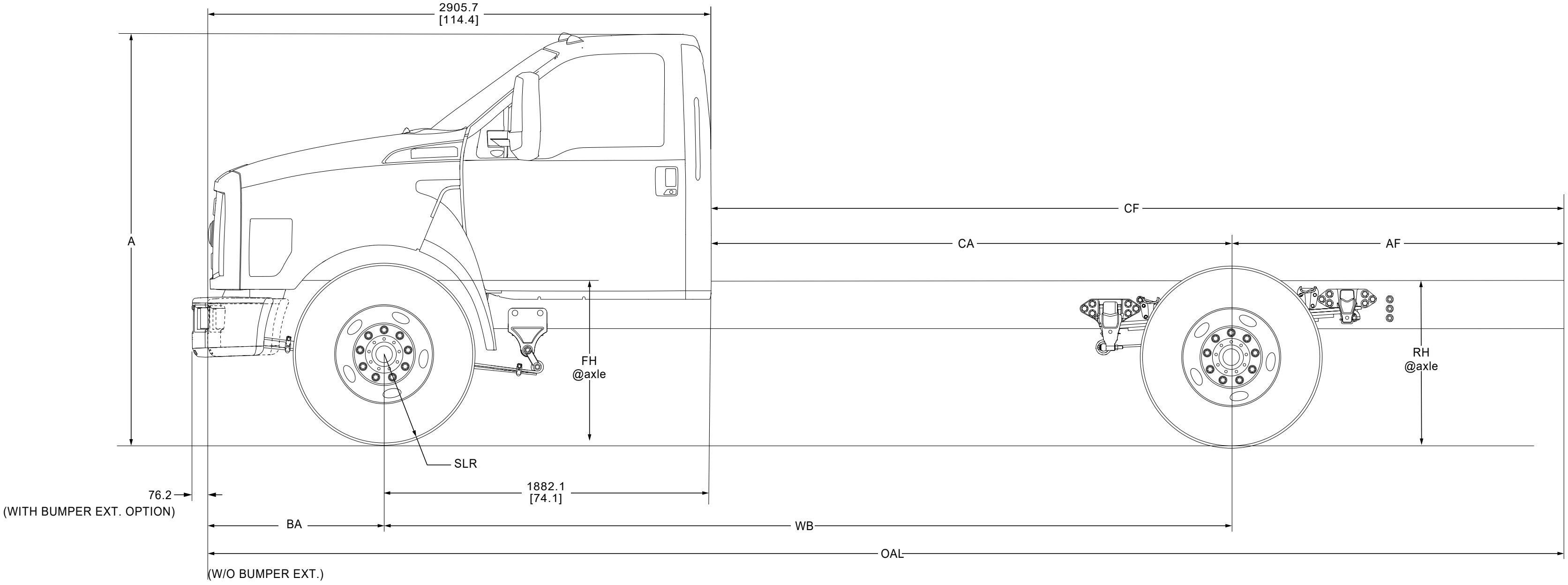
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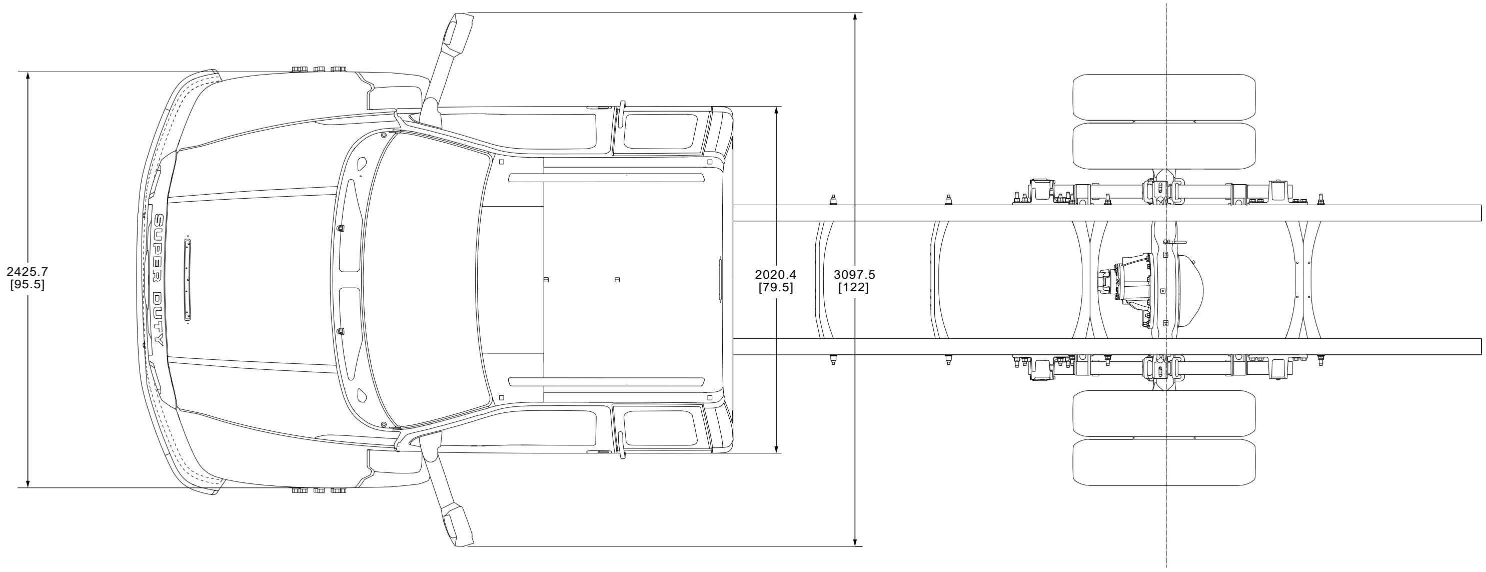
(WITH BUMPER EXT. OPTION)
BA
WB
OAL
(W/O BUMPER EXT.)

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
DIMENSIONAL DATA
SUPER CAB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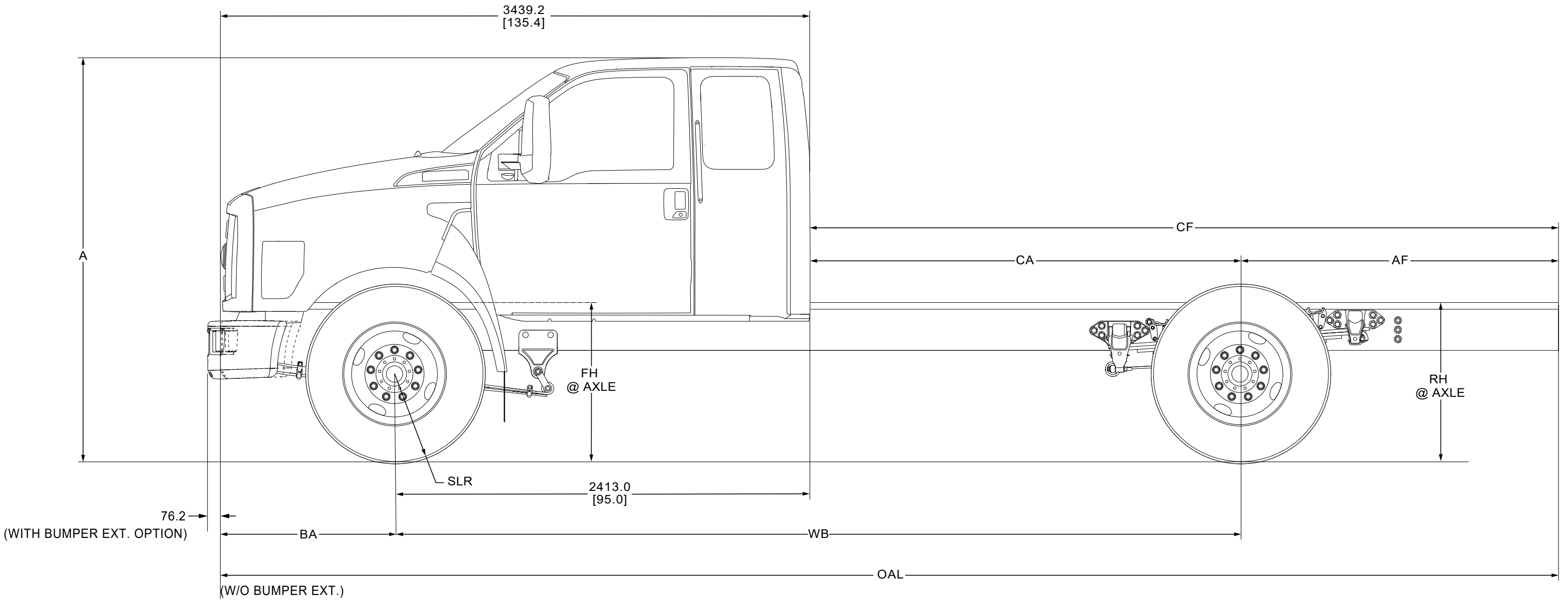
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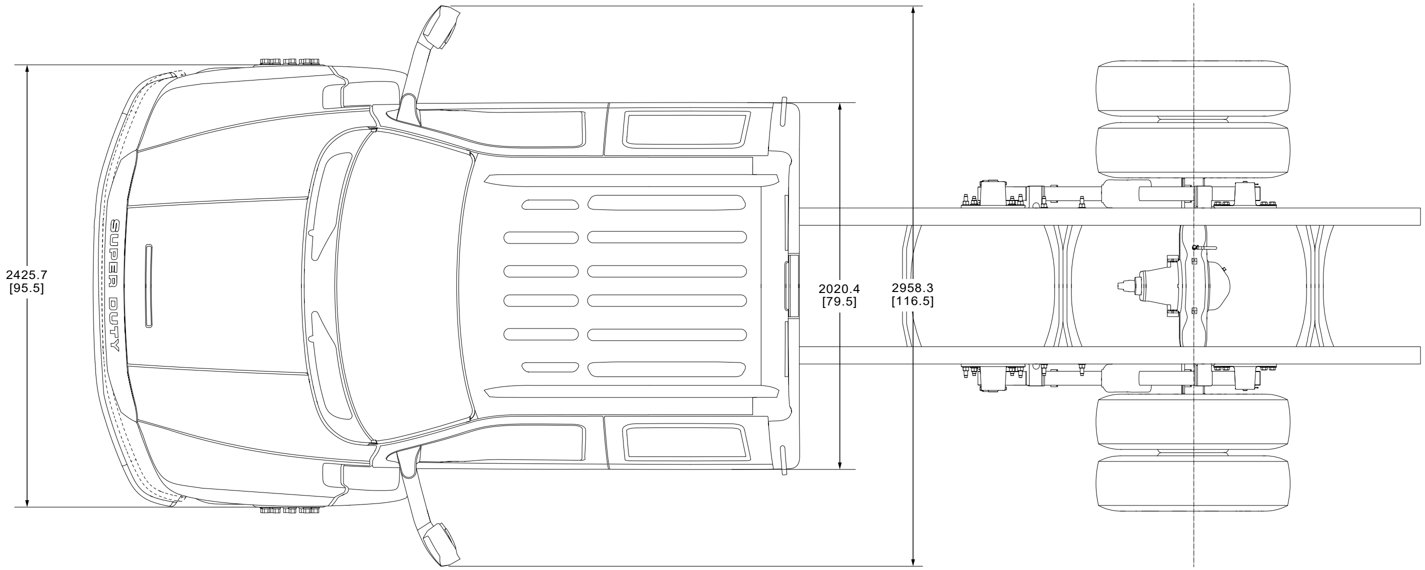
(WITH BUMPER EXT. OPTION)
BA
WB
OAL
(W/O BUMPER EXT.)

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
DIMENSIONAL DATA
CREW CAB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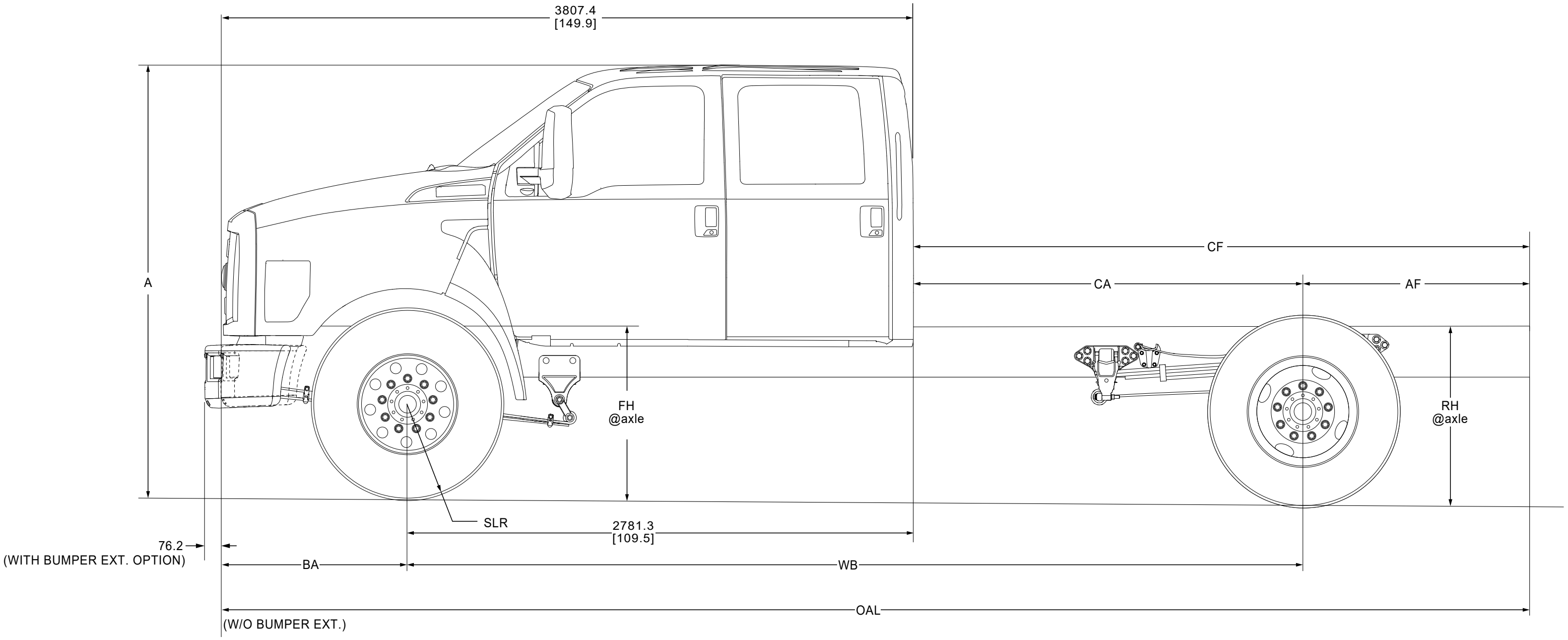
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76.2
(WITH BUMPER EXT. OPTION)
BA
WB
OAL
(W/O BUMPER EXT.)

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
DIMENSIONAL DATA
RIDE HEIGHT, CAB HEIGHT & FRAME LENGTH

FRONT RIDE HEIGHTS, FH @ Axle									REGULAR CAB		SUPER CAB		CREW CAB	
MODEL	STD FRONT TIRE	GVWR	FRONT AXLE	SPRING CAPACITY	EMPTY REG CAB mm [in]	EMPTY SUPER CAB mm [in]	EMPTY CREW CAB mm [in]	LOADED ALL CAB mm [in]	CAB HEIGHT VALUE "A" EMPTY	CAB HEIGHT VALUE "A" LOADED	CAB HEIGHT VALUE “A” EMPTY	CAB HEIGHT VALUE “A” LOADED	CAB HEIGHT VALUE “A” EMPTY	CAB HEIGHT VALUE “A” LOADED
F650 Kick up (8.5" Frame)	245/70 R19.5	24,000-27,500	8,500	8,500	844.5 [33.2]	843.0 [33.2]	840.0 [33.1]	805.0 [31.7]	2309.9 [94.9]	2273.3 [89.5]	2307.9 [90.9]	2272.9 [89.5]	2305.5 [90.8]	2278.2 [89.7]
F-650 w/19.5" Wheels (8.5" Frame)	245/70 R19.5	24,000-27,500	8,500	8,500	840.0 [33.1]	839.0 [33.0]	838.0 [33.0]	805.0 [31.7]	2310.7 [91.0]	2273.3 [89.5]	2309.2 [90.9]	2275.4 [89.6]	2308.0 [90.9]	2282.5 [89.9]
		25,500-29,000	10,000	10,000	842.5 [33.2]	844.0 [33.2]	843.0 [33.2]	795.9 [31.3]	2314.4 [91.1]	2266.7 [89.2]	2313.1 [91.1]	2268.5 [89.3]	2311.9 [91.0]	277.31 [89.6]
F650 w/22.5" Wheels (9.5" Frame)	11 R22.5	25,500-31,001	8,500	8,500	935.0 [36.8]	935.0 [36.8]	932.0 [36.7]	903.0 [35.6]	2406.2 [94.7]	2374.2 [93.2]	2403.9 [94.6]	2373.3 [93.4]	2403.7 [94.6]	2373.3 [93.4]
			10,000	10,000	940.0 [37.0]	939.0 [37.0]	938.0 [36.9]	894.0 [35.2]	2409.9 [94.9]	2368.2 [93.2]	2408.5 [94.8]	2367.2 [93.2]	2407.7 [94.8]	2366.3 [93.2]
F750 (9.5" Frame)	11 R22.5	31,000-35,000	10,000	10,000	940.0 [37.0]	938.0 [36.9]	938.0 [36.9]	894.0 [35.2]	2410.9 [94.9]	2367.5 [93.2]	2408.6 [94.8]	2368.2 [93.2]	2408.5 [94.8]	2366.3 [93.2]
		33,000-36,200	12,000	12,000	949.0 [37.4]	947.0 [37.3]	947.0 [37.3]	896.0 [35.3]	2417.6 [95.2]	2369.5 [93.3]	2415.6 [95.1]	2368.0 [93.2]	2415.5 [95.1]	2367.9 [93.2]
		36,200-37,000	14,000	14,000	954.0 [37.6]	953.0 [37.5]	953.0 [37.5]	895.0 [35.2]	2421.3 [95.3]	2368.2 [93.2]	2420.1 [95.3]	2367.2 [93.2]	2420.2 [95.3]	2367.1 [93.2]

REAR RIDE HEIGHTS, RH @ Axle							
MODEL	STD REAR TIRE	GVWR	REAR AXLE	SPRING CAPACITY	EMPTY REG CAB mm [in]	LOADED ALL CAB mm [in]	SUSP TYPE
F650 Pro-Loader with 9.125 Tapered Rail	245/70 R19.5	24,000	13,500	15,500	845.0 [33.3]	819 [32.2]	MULTI-LEAF
			13,500	15,500	844.0 [33.2]	819 [32.2]	MULTI-LEAF
		27,500	17,500	19,000	863.0 [34.0]	830.0 [32.7]	MULTI-LEAF
			17,500	19,000	863.0 [34.0]	830.0 [32.7]	MULTI-LEAF
		24,000	17,500	15,500	845.0 [33.3]	809.0 [31.8]	MULTI-LEAF
			17,500	15,500	844.0 [33.2]	809.0 [31.8]	MULTI-LEAF
		20,500 - 27,500	13,500-17,500	12,000-19,000	820.0 [32.3]	820.0 [32.3]	AIR (5.3")
F650 Pro-Loader with 9.125 ST FRAME	245/70 R19.5	20,500 - 27,500	17,500	19,000	863.0 [34.0]	830.0 [32.7]	MULTI-LEAF
			17,500	19,000	863.0 [34.0]	830.0 [32.7]	MULTI-LEAF
F650 with 10.125" ST FRAME	11 R22.5	27,500-33,000	17,500	19,000	961.0 [37.8]	928.0 [36.5]	MULTI-LEAF
			17,500	19,000	960.0 [37.8]	928.0 [36.5]	MULTI-LEAF
			19,000	19,000	957.0 [37.7]	921.0 [36.9]	MULTI-LEAF
			19,000	19,000	956.0 [37.6]	921.0 [36.9]	MULTI-LEAF
			19,000	21,000	970.0 [38.2]	936.9 [36.9]	MULTI-LEAF
			19,000	21,000	969.0 [38.1]	936.9 [36.9]	MULTI-LEAF
			17,500	19,000	963.0 [37.9]	963.0 [37.9]	AIR (9.25")-DSL
			19,000	21,000	963.0 [37.9]	963.0 [37.9]	AIR (9.25")-DSL
F750 with 10.125" ST FRAME	11 R22.5	31,000-37,000	21,000	21,000	965.0 [38.0]	928.0 [36.5]	MULTI-LEAF
			21,000	21,000	964.0 [38.0]	928.0 [36.5]	MULTI-LEAF
			23,000	23,000	971.0 [38.2]	934.9 [36.8]	MULTI-LEAF
			26,000	31,000	973.0 [38.3]	942.9 [37.1]	MULTI-LEAF
			21,000-26,000	21,000-23,000	963.0 [37.9]	963.0 [37.9]	AIR (9.25")-DSL

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
DIMENSIONAL DATA
RIDE HEIGHT, CAB HEIGHT & FRAME LENGTH (Cont'd)

REGULAR CAB Configuration

WB		BA		CF		CA		AF		OAL	
[in]	mm	[in]	mm	[in]	mm	[in]	mm	[in]	mm	[in]	mm
146	3708	40.4	1026	111.0	2819	72.0	1829	39	991	225	5725
158	4013	40.4	1026	123.0	3124	84.0	2134	39	991	237	6029
158	4013	40.4	1026	133.0	3378	84.0	2134	49	1245	247	6283
158	4013	40.4		147.0	3734	84.0	2134	63	1600	261	6639
176	4470	40.4	1026	172.0	4369	102.0	2591	70	1778	286	7274
182	4623	40.4	1026	178.0	4521	108.0	2743	70	1778	292	7426
182	4623	40.4	1026	183.0	4648	108.0	2743	75	1905	297	7553
194	4928	40.4	1026	195.0	4953	120.0	3048	75	1905	309	7858
194	4928	40.4	1026	195.0	4953	120.0	3048	75	1905	309	7858
200	5080	40.4	1026	201.0	5105	126.0	3200	75	1905	315	8011
212	5385	40.4	1026	219.0	5563	138.0	3505	81	2057	333	8468
218	5537	40.4	1026	225.0	5715	144.0	3658	81	2057	339	8620
218	5537	40.4	1026	225.0	5715	144.0	3658	81	2057	339	8620
224	5690	40.4	1026	237.0	6020	150.0	3810	87	2210	351	8925
230	5842	40.4	1026	243.0	6172	156.0	3962	87	2210	357	9077
242	6147	40.4	1026	268.0	6807	168.0	4267	100	2540	382	9712
242	6147	40.4	1026	268.0	6807	168.0	4267	100	2540	382	9712
260	6604	40.4	1026	279.0	7087	186.0	4724	93	2362	393	9992
260	6604	40.4	1026	306.0	7772	186.0	4724	120	3048	420	10678
281	7137	40.4	1026	327.0	8306	207.0	5258	120	3048	441	11211

CREW CAB Configuration

WB		BA		CF		CA		AF		OAL	
[in]	mm	[in]	mm	[in]	mm	[in]	mm	[in]	mm	[in]	mm
182	4623	40.4	1026	111.0	2819	72.0	1829	39	991	261	6639
182	4623	40.4	1026	121.0	3073	72.0	1829	49	1245	271	6893
194	4928	40.4	1026	133.0	3378	84.0	2134	49	1245	283	7198
194	4928	40.4	1026	147.0	3734	84.0	2134	63	1600	297	7553
212	5385	40.4	1026	172.0	4369	102.0	2591	70	1778	322	8188
218	5537	40.4	1026	178.0	4521	108.0	2743	70	1778	328	8341
218	5537	40.4	1026	183.0	4648	108.0	2743	75	1905	333	8468
230	5842	40.4	1026	195.0	4953	120.0	3048	75	1905	345	8773
236	5994	40.4	1026	201.0	5105	126.0	3200	75	1905	351	8925
248	6299	40.4	1026	219.0	5563	138.0	3505	81	2057	369	9382
254	6452	40.4	1026	240.0	6096	144.0	3658	96	2438	390	9916
254	6452	40.4	1026	225.0	5715	144.0	3658	81	2057	375	9535
260	6604	40.4	1026	237.0	6020	150.0	3810	87	2210	387	9839
266	6756	40.4	1026	243.0	6172	156.0	3962	87	2210	393	9992
278	7061	40.4	1026	268.0	6807	168.0	4267	100	2540	418	10627

SUPER CAB Configuration

WB		BA		CF		CA		AF		OAL	
[in]	mm	[in]	mm	[in]	mm	[in]	mm	[in]	mm	[in]	mm
167	4242	40.4	1026	111.0	2819	72.0	1829	39	991	246	6258
179	4547	40.4	1026	123.0	3124	84.0	2134	39	991	258	6563
179	4547	40.4	1026	133.0	3378	84.0	2134	49	1245	268	6817
179	4547	40.4	1026	147.1	3736	84.1	2136	63	1600	282	7172
197	5004	40.4	1026	171.8	4364	101.8	2586	70	1778	307	7807
203	5156	40.4	1026	178.1	4524	108.1	2746	70	1778	313	7960
203	5156	40.4	1026	183.1	4651	108.1	2746	75	1905	318	8087
215	5461	40.4	1026	194.9	4950	119.9	3045	75	1905	330	8392
221	5613	40.4	1026	200.8	5100	125.8	3195	75	1905	336	8544
233	5918	40.4	1026	219.0	5563	138.0	3505	81	2057	354	9001
239	6071	40.4	1026	225.0	5715	144.0	3658	81	2057	360	9154
239	6071	40.4	1026	225.0	5715	144.0	3658	81	2057	360	9154
245	6223	40.4	1026	237.0	6020	150.0	3810	87	2210	372	9458
251	6375	40.4	1026	243.0	6172	156.0	3962	87	2210	378	9611
263	6680	40.4	1026	268.0	6807	168.0	4267	100	2450	403	10246
281	7137	40.4	1026	306.0	7772	186.0	4724	120	3048	441	11211

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
DIMENSIONAL DATA
SPRING CAPACITIES

FRONT SPRING IDENTIFICATION AND CAPACITY RATINGS

FRONT SUSPENSION CAPACITY AT GROUND i.e., SPRINGS/BRACKETS LBS	TOTAL NO.OF LEAVES	TOTAL SPRING PACK THICKNESS AT PAD - IN	ONE SPRING CAPACITY AT PAD - LBS	ONE SPRING CAPACITY AT GROUND - LBS
8,500	2	3.64	3,825	4,250
10,000	2	3.60	4,500	5,000
12,000	2	3.62	5,400	6,000
13,200	3	3.62	5,940	6,600
14,000	3	3.68	6,300	7,000

REAR SPRING IDENTIFICATION AND CAPACITY RATINGS

	PER AXLE END					
FULL SUSPENSION CAPACITY AT GROUND i.e., SPRINGS/BRACKETS LBS	TOTAL NO.OF LEAVES MAIN SPRING	TOTAL SPRING PACK THICKNESS AT PAD - IN	MAIN SPRING CAPACITY AT PAD - LBS	AUXILIARY SPRING CAPACITY AT PAD LBS	MAIN & AUXILIARY COMBINATION CAPACITY AT PAD - LBS	MAIN & AUXILIARY COMBINATION CAPACITY AT GROUND - LBS
15,500	9	7.17	5,350	1,450	6,800	7,750
19,000	10	7.74	7,097	1,450	8,547	9,500
21,000	10	8.03	7,991	1,450	9,441	10,500
23,000	10	8.3	8,805	1,450	10,255	11,500
31,000	10	9.05	12,551	1,450	14,001	15,500

REAR AIR SUSPENSION IDENTIFICATION AND CAPACITY RATINGS

	PER AXLE END			
FULL SUSPENSION CAPACITY AT GROUND LBS	AIR SPRING DIMENSIONS AT LOAD (EXCLUDING MOUNTING BRACKETS)	SYSTEM CAPACITY AT PAD - LBS	SYSTEM CAPACITY AT GROUND - LBS	PRESSURE AT RATED LOAD PSI
12,000	12.23" High X 12.6" Diameter	5,400	6,000	41
19,000	12.24" High X 12.6" Diameter	8,550	9,500	65
21,000	12.15" High X 12.6" Diameter	9,450	10,500	72
23,000	11.92" High X 12.6" Diameter	10,350	11,500	80

NOTES — [ ] DIMENSIONS ARE INCHES.

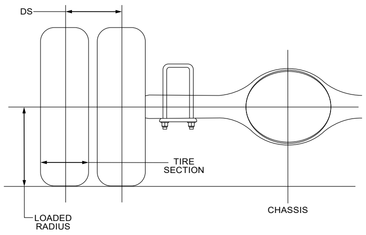
F650/750 SUPER DUTY
DIMENSIONAL DATA
AXLE TRACK

FRONT AXLE TRACK

DISC	WHEEL	WHEEL TYPE	DISC THICKNESS		WHEEL OFFSET		FRONT AXLE TRACK							
							8,500 lb				10,000 - 14,000 lb			
							BRAKE TYPE				BRAKE TYPE			
							AIR		HYD		AIR		HYD (10-12K)	
19.5 x 6.75	Steel	8H	0.43	11	5.17	131.24	-	-	84	2133	-	-	-	-
19.5 x 6.75	Aluminum	8H	0.71	18	4.84	123	85	2156	85	2156	83.8	2128	84	2134
19.5 x 7.50	Steel	10H	0.43	11	5.97	151.56	81	2057	81	2057	82.1	2084	82.3	2090
19.5 x 7.50	Aluminum	10H	0.87	22.22	5.23	132.78	82.5	2094	82.5	2094	81.8	2079	82.1	2085
22.5 x 8.25	Steel	10H	0.42	10.67	6.2	157.48	80.5	2045	80.5	2045	83.5	2122	83.8	2128
22.5 x 8.25	Aluminum	10H	0.81	20.5	5.79	147.1	81.3	2066	81.3	2066	82.4	2094	82.7	2100

REAR AXLE TRACK

DISC	WHEEL (inner)	WHEEL (outer)	WHEEL TYPE	DISC THICKNESS (inner)		DISC THICKNESS (outer)		WHEEL OFFSET (inner)		DUAL SPACING (DS)		REAR AXLE TRACK							
												BRAKE TYPE					BRAKE TYPE		
												AIR		HYD			AIR	HYD	
				in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
19.5x6.75	Steel	Steel	8H	0.43	11	0.43	11	5.17	131.24	11.2	284.48	-	-	72.6	1844	-	-	-	-
19.5x6.75	Steel	Aluminum	8H	0.43	11	0.71	18	5.17	131.24	11.15	283.24								
19.5x6.75	Aluminum	Aluminum	8H	0.71	18	0.71	18	4.84	123	11.1	282								
19.5x7.50	Steel	Steel	10H	0.43	11	0.43	11	5.97	151.56	12.8	325.12	72.7	1848	72.6	1844	-	-	-	-
19.5x7.50	Steel	Aluminum	10H	0.43	11	0.87	22.22	5.97	151.56	12.5	317.56	73	1853	72.8	1849	-	-	-	-
19.5x7.50	Aluminum	Aluminum	10H	0.87	22.22	0.87	22.22	5.23	132.78	12.2	310								
												72.7	1847	72.6	1843	72.7	1847	-	-
22.5x8.25	Steel	Steel	10H	0.42	10.67	0.42	10.67	6.2	157.48	13.24	336.3	72.7	1847	72.6	1843	72.7	1847	-	-
22.5x8.25	Steel	Aluminum	10H	0.42	10.67	0.81	20.5	6.2	157.48	13.22	335.75	72.9	1853	72.8	1849	72.9	1853	-	-
22.5x8.25	Aluminum	Aluminum	10H	0.81	20.5	0.81	20.5	5.79	147.1	13.2	335.2								



REAR AXLE
DUAL TIRE / WHEEL

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
DIMENSIONAL DATA
TIRE DIMENSION DATA

Size	Max Infl (psi)	Max Ford Rim (in.)	CS Max grown Overall Width (in.)	OD Max Grown Deep Traction Tread (in.)	SLR (in.)	RPM
245/70R19.5G	110	7.5	10.24	34.06	15.5	630
245/70R19.5H	120	7.5	10.24	34.06	15.5	630
265/70R19.5G	110	7.5	10.83	34.96	15.8	614
11R22.5G	105	8.25	11.88	42.82	19.7	497
11R22.5H	120	8.25	11.88	42.82	19.5	497
255/70R22.5H	120	8.25	10.55	37.44	17.4	565
275/80R22.5G	110	8.25	11.42	41.02	18.8	515
275/80R22.5H	120	8.25	11.42	41.02	18.8	515
295/75R22.5H	120	8.25	12.32	41.1	18.9	512
295/80R22.5H	120	8.25	12.32	42.32	19.3	501

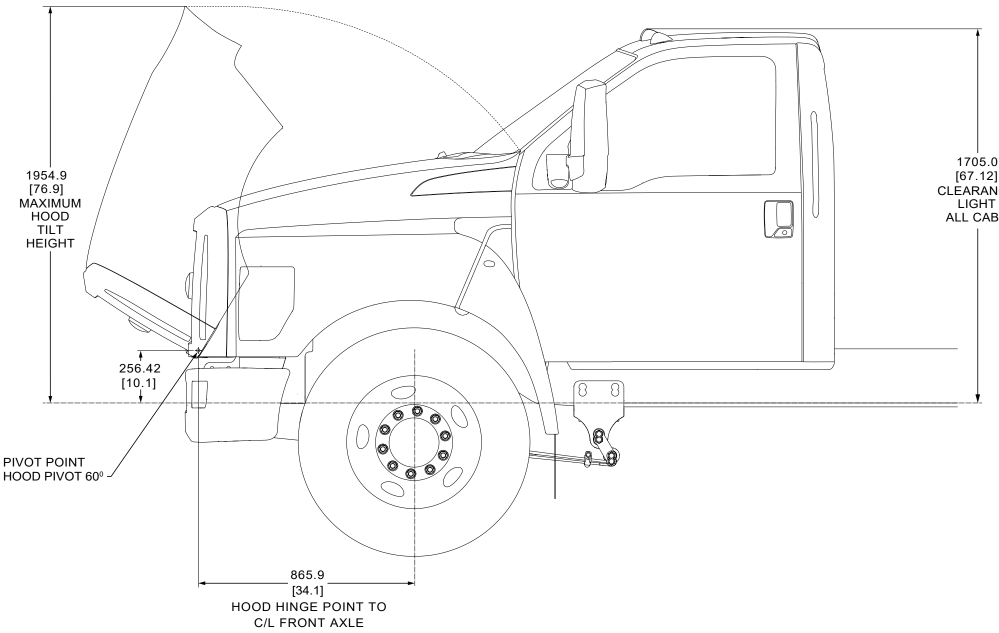
NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
DIMENSIONAL DATA
WHEEL & TIRE RATINGS

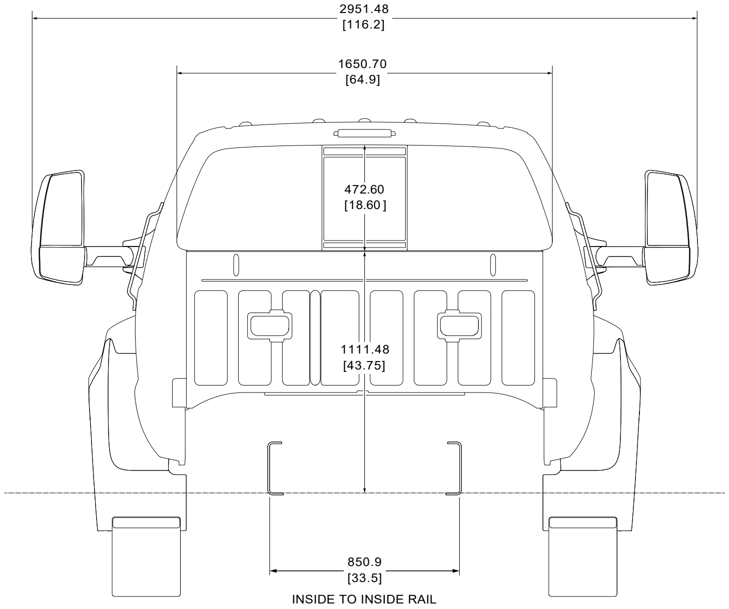
TIRE SIZE, LOAD RANGE (PR)	WHEEL WIDTH (in) & TYPE	MAXIMUM TIRE & WHEEL CAPACITY PER AXLE (lb) @ PSI	
		FRONT	REAR
245/70R19.5 G	6.75 in. 8 stud steel	9,080 @ 110 psi	17,200 @ 110 psi
	6.75 in 8 stud aluminum	9,080 @ 110 psi	17,200 @ 110 psi
	7.50 in. 10 stud steel	9,080 @ 110 psi	17,200 @ 110 psi
	7.50 in. 10 stud aluminum	9,080 @ 110 psi	17,200 @ 110 psi
245/70R19.5 H	6.75 in. 8 stud steel	9,610 @ 120 psi	18,160 @ 120 psi
	6.75 in 8 stud aluminum	9,610 @ 120 psi	18,160 @ 120 psi
	7.50 in. 10 stud steel	9,610 @ 120 psi	18,160 @ 120 psi
	7.50 in. 10 stud aluminum	9,610 @ 120 psi	18,160 @ 120 psi
265/70R19.5 G	6.75 in. 8 stud steel	10,140 @ 110 psi	18,700 @ 110 psi
	6.75 in 8 stud aluminum	10,140 @ 110 psi	18,700 @ 110 psi
	7.50 in. 10 stud steel	10,140 @ 110 psi	18,700 @ 110 psi
	7.50 in. 10 stud aluminum	10,140 @ 110 psi	18,700 @ 110 psi
11R22.5 G	8.25 in. 10 stud steel	12,350 @ 105 psi	23,360 @ 105 psi
	8.25 in. 10 stud aluminum	12,350 @ 105 psi	23,360 @ 105 psi
11R22.5 H	8.25 in. 10 stud steel	13,220 @ 120 psi	24,020 @ 120 psi
	8.25 in. 10 stud aluminum	13,220 @ 120 psi	24,020 @ 120 psi
255/70R22.5 H	8.25 in. 10 stud steel	11,020 @ 120 psi	20,280 @ 120 psi
	8.25 in. 10 stud aluminum	11,020 @ 120 psi	20,280 @ 120 psi
275/80R22.5 G	8.25 in. 10 stud steel	12,350 @ 110 psi	22,700 @ 110 psi
	8.25 in. 10 stud aluminum	12,350 @ 110 psi	22,700 @ 110 psi
275/80R22.5 H	8.25 in. 10 stud steel	13,220 @ 120 psi	24,020 @ 120 psi
	8.25 in. 10 stud aluminum	13,220 @ 120 psi	24,020 @ 120 psi
295/75R22.5H	8.25 in. 10 stud steel	13,220 @ 120 psi	24,020 @ 120 psi
	8.25 in. 10 stud aluminum	13,220 @ 120 psi	24,020 @ 120 psi
295/80R22.5 H	8.25 in. 10 stud steel	14,780 @ 120 psi	27,120 @ 120 psi
	8.25 in. 10 stud aluminum	14,780 @ 120 psi	27,120 @ 120 psi

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
DIMENSIONAL DATA
TILT HOOD & BACK OF CAB


1954.9
[76.9]
MAXIMUM
HOOD
TILT
HEIGHT
256.42
[10.1]
PIVOT POINT
HOOD PIVOT 60⁰
865.9
[34.1]
HOOD HINGE POINT TO
C/L FRONT AXLE
1705.0
[67.12]
CLEARANCE
LIGHT
ALL CABS

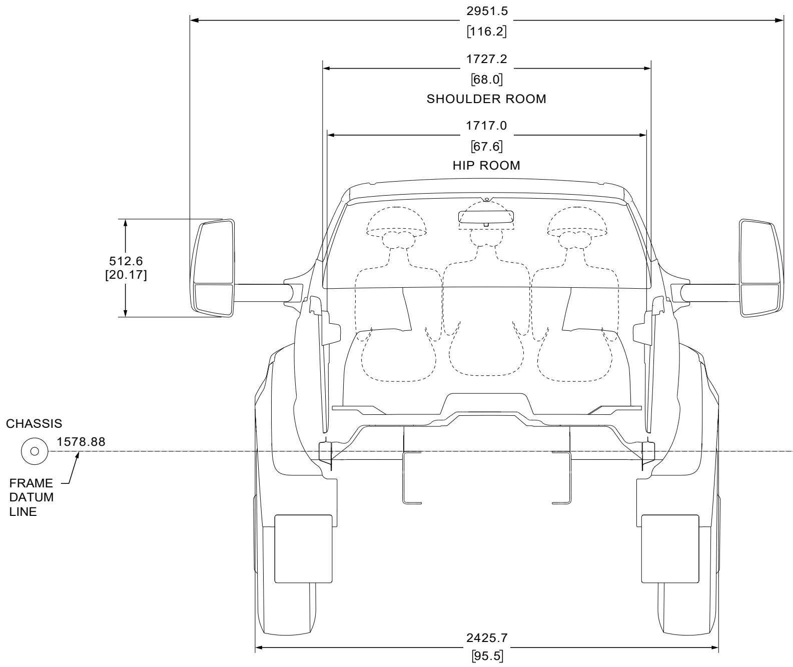
SIDE VIEW


2951.48
[116.2]
1650.70
[64.9]
472.60
[18.60]
1111.48
[43.75]
850.9
[33.5]
INSIDE TO INSIDE RAIL

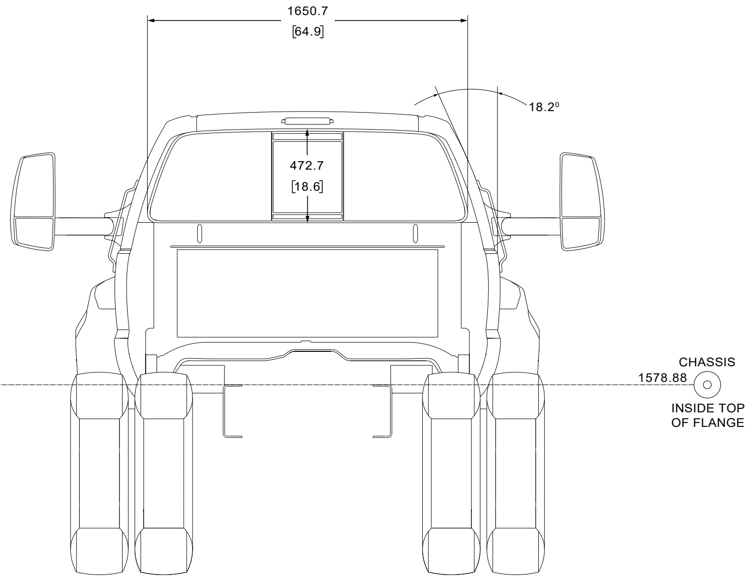
REAR VIEW

NOTES — [ ] DIMENSIONS ARE INCHES.

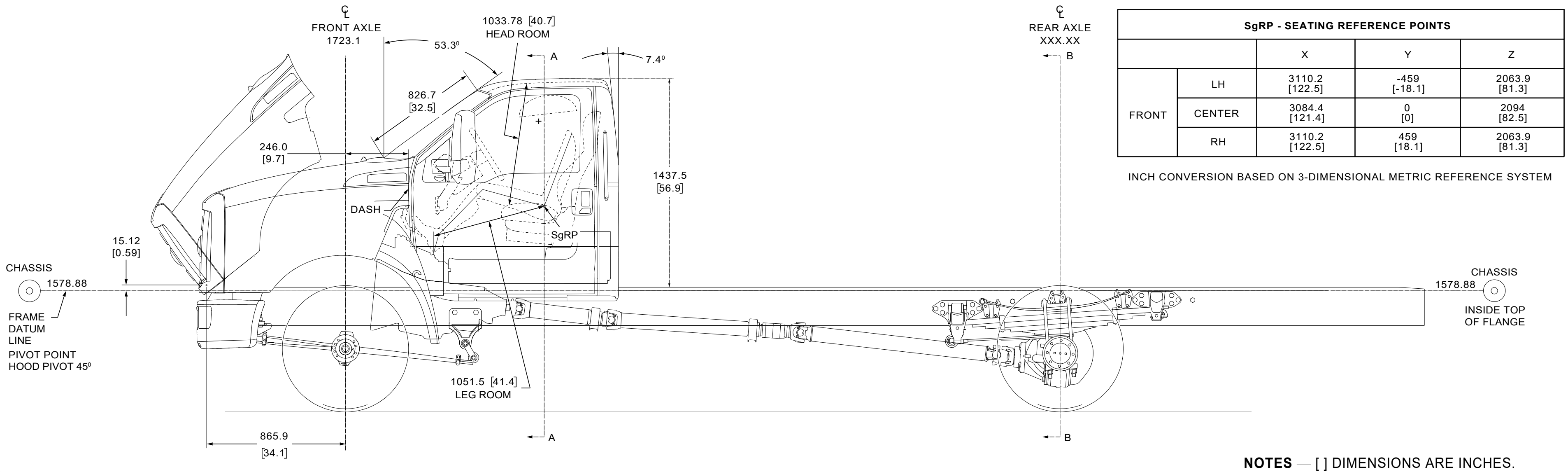
F650/750 SUPER DUTY
DIMENSIONAL DATA
REGULAR CAB CHASSIS


2951.5
[116.2]
1727.2
[68.0]
SHOULDER ROOM
1717.0
[67.6]
HIP ROOM
512.6
[20.17]
CHASSIS
1578.88
FRAME
DATUM
LINE
2425.7
[95.5]

SEC A


1650.7
[64.9]
18.2⁰
472.7
[18.6]
CHASSIS
1578.88
INSIDE TOP
OF FLANGE

SEC B


℄
FRONT AXLE
1723.1
53.3⁰
1033.78 [40.7]
HEAD ROOM
A
7.4⁰
826.7
[32.5]
246.0
[9.7]
1437.5
[56.9]
DASH
SgRP
15.12
[0.59]
CHASSIS
1578.88
FRAME
DATUM
LINE
PIVOT POINT
HOOD PIVOT 45⁰
1051.5 [41.4]
LEG ROOM
865.9
[34.1]
A
℄
REAR AXLE
XXX.XX
B
B
CHASSIS
1578.88
INSIDE TOP
OF FLANGE

SgRP - SEATING REFERENCE POINTS

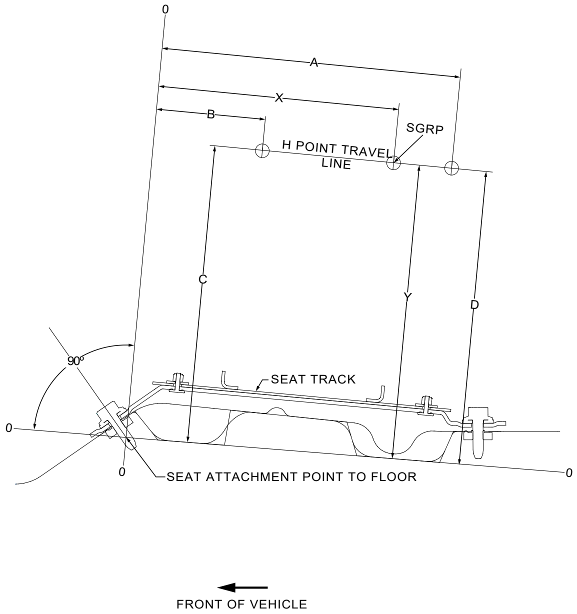
		X	Y	Z
FRONT	LH	3110.2 [122.5]	-459 [-18.1]	2063.9 [81.3]
	CENTER	3084.4 [121.4]	0 [0]	2094 [82.5]
	RH	3110.2 [122.5]	459 [18.1]	2063.9 [81.3]

INCH CONVERSION BASED ON 3-DIMENSIONAL METRIC REFERENCE SYSTEM

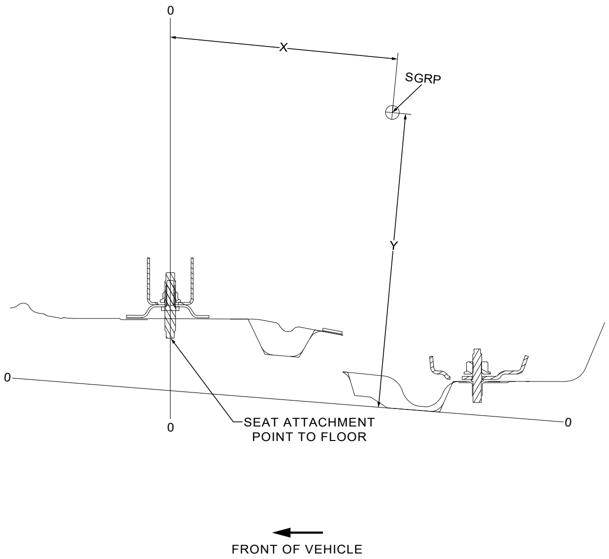
NOTES — [ ] DIMENSIONS ARE INCHES.

Body Builders Layout Book

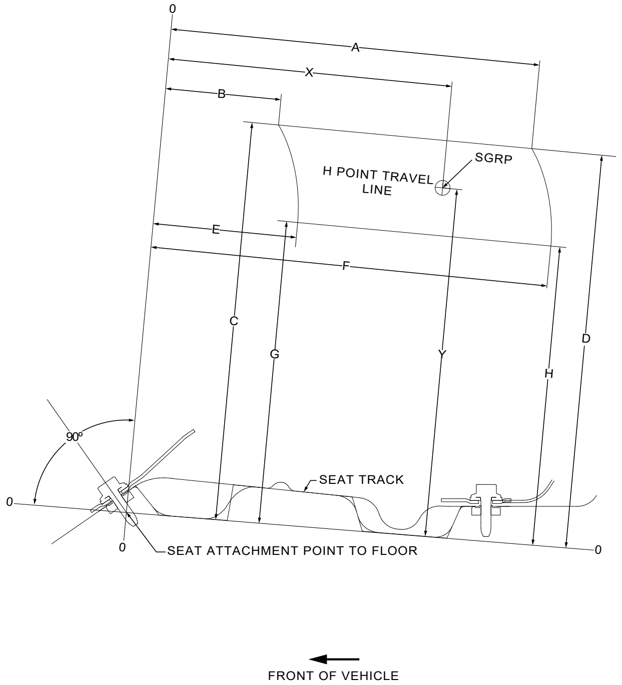
F650/750 SUPER DUTY
SEAT H POINT
ALL MODELS


0
A
X
B
SGRP
H POINT TRAVEL LINE
C
Y
D
90°
SEAT TRACK
0
0
SEAT ATTACHMENT POINT TO FLOOR
0
FRONT OF VEHICLE

2 WAY SEAT


0
X
SGRP
Y
0
0
SEAT ATTACHMENT POINT TO FLOOR
0
FRONT OF VEHICLE

20 % 2 WAY SEAT

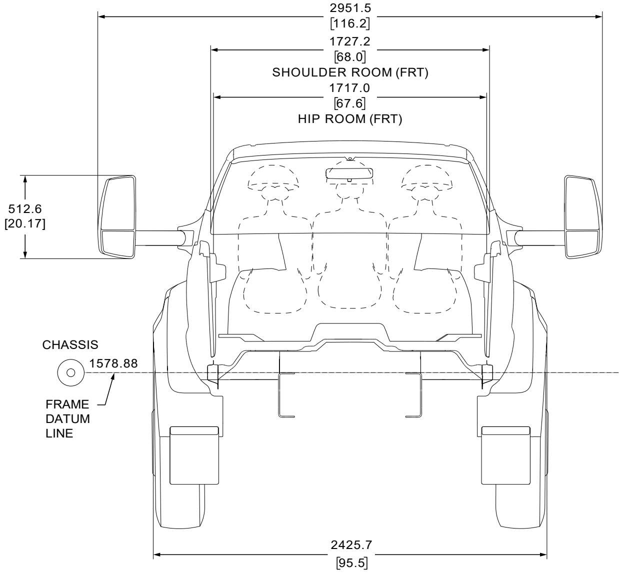

0
A
X
B
SGRP
H POINT TRAVEL LINE
E
F
C
G
Y
H
D
90°
SEAT TRACK
0
0
SEAT ATTACHMENT POINT TO FLOOR
0
FRONT OF VEHICLE

MULTI - WAY SEAT

FORD F-650 & F-750 SEATING REFERENCE POINT (SRP)										
Seat Model	Seat Dimensions								SgRP Location	
	A	B	C	D	E	F	G	H	X	Y
2 Way 30% Seats	278.0	125.6	327.3	327.3	-	-	-	-	278.0	327.3
4 Way 30% Seats	343.5	191.1	369.4	369.4	191.1	343.5	293.0	293.0	343.5	344.3
Pass Bench 70% Seats	309.2	309.2	328.9	328.9	-	-	-	-	309.2	328.9
Driver 2 Way 40% Seats	334.4	132.1	329.1	337.4	-	-	-	-	272.8	334.9
Stationary Mode 20% Seats	-	-	-	-	-	-	-	-	227.4	313.5

NOTES — DIMENSIONS ARE IN MM

F650/750 SUPER DUTY
DIMENSIONAL DATA
SUPER CAB CHASSIS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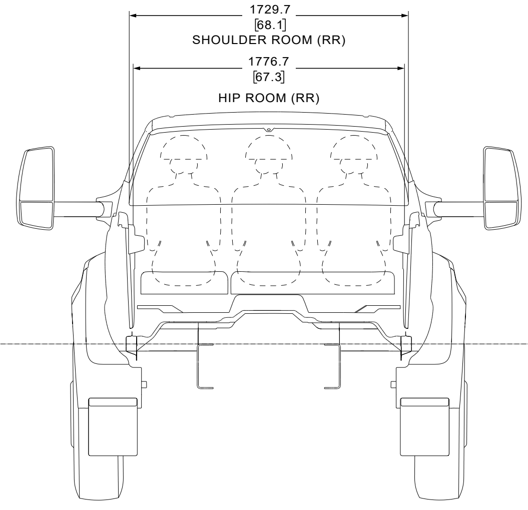
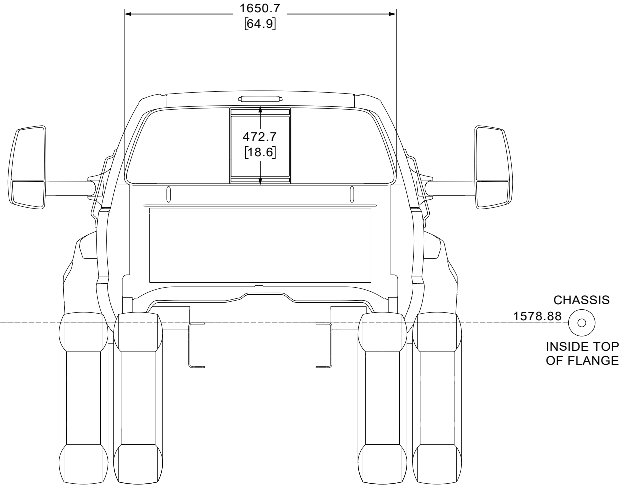
[116.2]
1727.2
[68.0]
SHOULDER ROOM (FRT)
1717.0
[67.6]
HIP ROOM (FRT)
512.6
[20.17]
CHASSIS
1578.88
FRAME
DATUM
LINE
2425.7
[95.5]

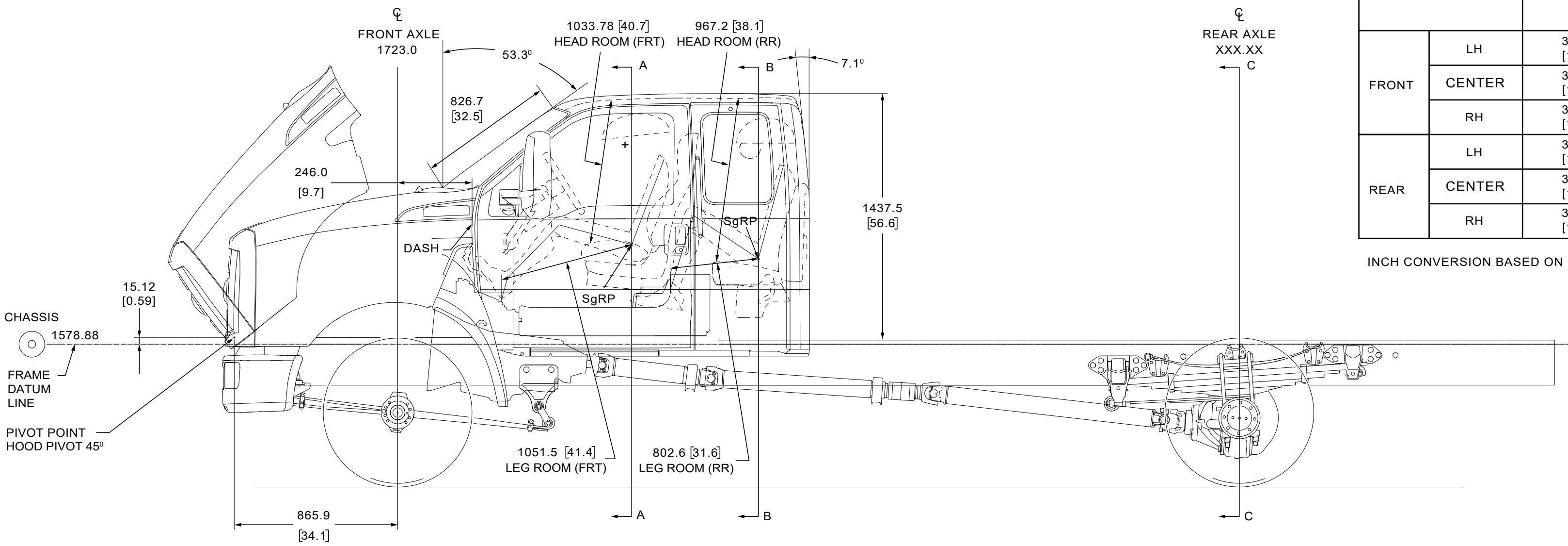
SEC A


1729.7
[68.1]
SHOULDER ROOM (RR)
1776.7
[67.3]
HIP ROOM (RR)

SEC B


1650.7
[64.9]
472.7
[18.6]
CHASSIS
1578.88
INSIDE TOP
OF FLANGE

SEC C


℄
FRONT AXLE
1723.0
53.3°
1033.78 [40.7]
HEAD ROOM (FRT)
967.2 [38.1]
HEAD ROOM (RR)
7.1°
A
B
826.7
[32.5]
246.0
[9.7]
1437.5
[56.6]
SgRP
DASH
SgRP
15.12
[0.59]
CHASSIS
1578.88
FRAME
DATUM
LINE
PIVOT POINT
HOOD PIVOT 45°
1051.5 [41.4]
LEG ROOM (FRT)
802.6 [31.6]
LEG ROOM (RR)
865.9
[34.1]
A
B
℄
REAR AXLE
XXX.XX
C
C
CHASSIS
1578.88
INSIDE TOP
OF FLANGE

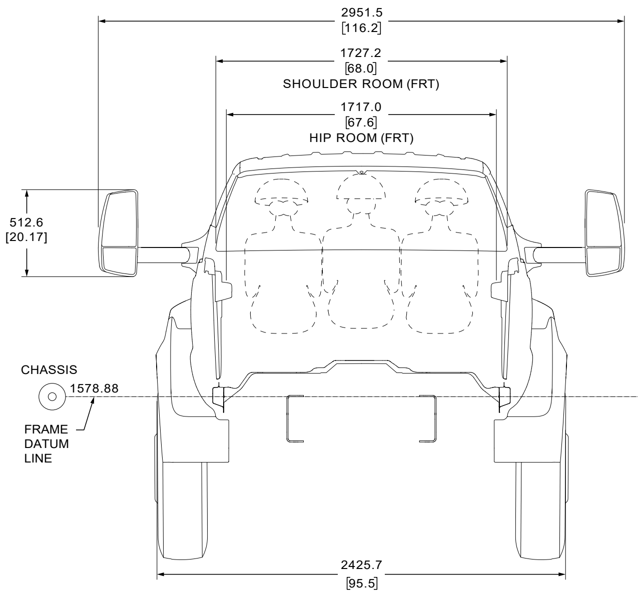
SgRP - SEATING REFERENCE POINTS

		X	Y	Z
FRONT	LH	3110.2 [122.5]	-459 [-18.1]	2063.9 [81.3]
	CENTER	3084.4 [121.4]	0 [0]	2094 [82.5]
	RH	3110.2 [122.5]	459 [18.1]	2063.9 [81.3]
REAR	LH	3839.6 [151.2]	-523 [-20.6]	2066.9 [81.4]
	CENTER	3839.6 [151.2]	0 [0]	2066.9 [81.4]
	RH	3839.6 [151.2]	523 [20.6]	2066.9 [81.4]

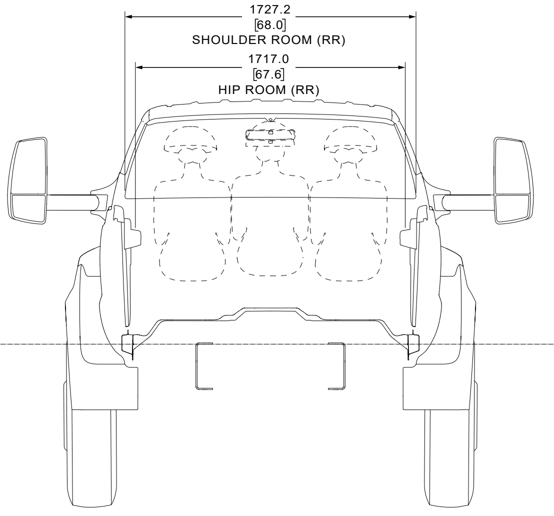
INCH CONVERSION BASED ON 3-DIMENSIONAL METRIC REFERENCE SYSTEM

NOTES — [ ] DIMENSIONS ARE INCHES.

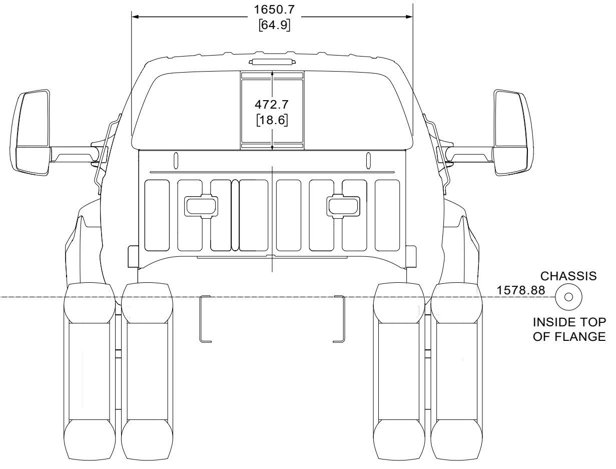
F650/750 SUPER DUTY
DIMENSIONAL DATA
CREW CAB CHASSIS


2951.5
[116.2]
1727.2
[68.0]
SHOULDER ROOM (FRT)
1717.0
[67.6]
HIP ROOM (FRT)
512.6
[20.17]
CHASSIS
1578.88
FRAME
DATUM
LINE
2425.7
[95.5]

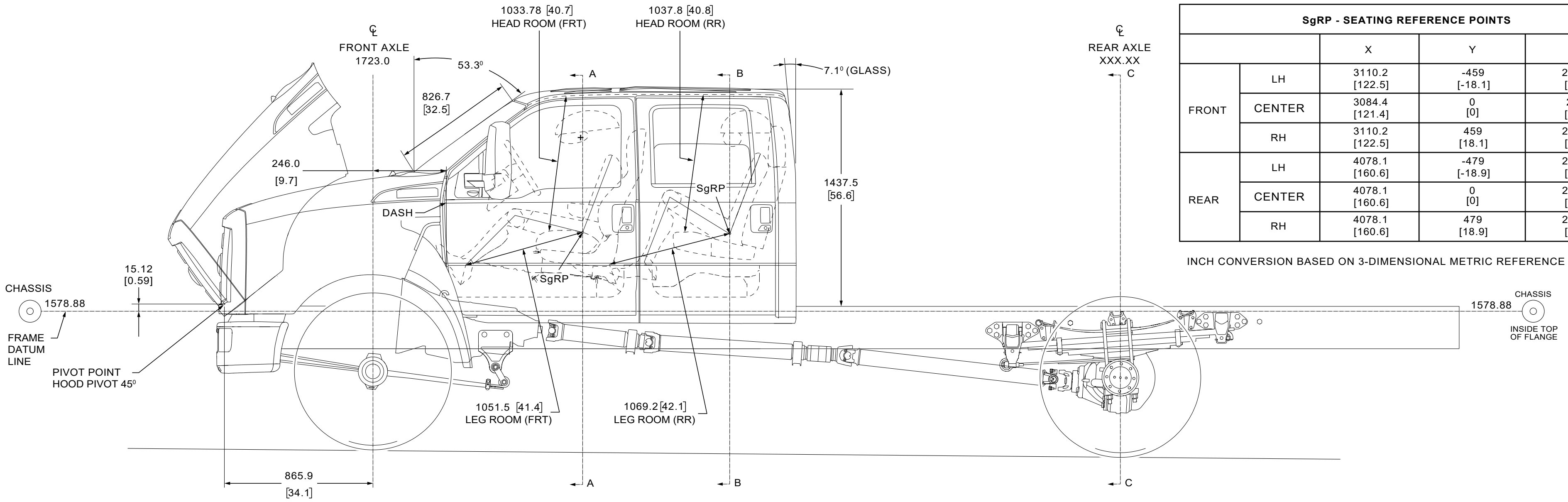
SEC A


1727.2
[68.0]
SHOULDER ROOM (RR)
1717.0
[67.6]
HIP ROOM (RR)

SEC B


1650.7
[64.9]
472.7
[18.6]
CHASSIS
1578.88
INSIDE TOP
OF FLANGE

SEC C


1033.78 [40.7]
HEAD ROOM (FRT)
1037.8 [40.8]
HEAD ROOM (RR)
℄
FRONT AXLE
1723.0
53.3°
826.7
[32.5]
A
B
7.1° (GLASS)
℄
REAR AXLE
XXX.XX
C
246.0
[9.7]
DASH
SgRP
1437.5
[56.6]
SgRP
15.12
[0.59]
CHASSIS
1578.88
FRAME
DATUM
LINE
PIVOT POINT
HOOD PIVOT 45°
1051.5 [41.4]
LEG ROOM (FRT)
1069.2 [42.1]
LEG ROOM (RR)
CHASSIS
1578.88
INSIDE TOP
OF FLANGE
865.9
[34.1]
A
B
C

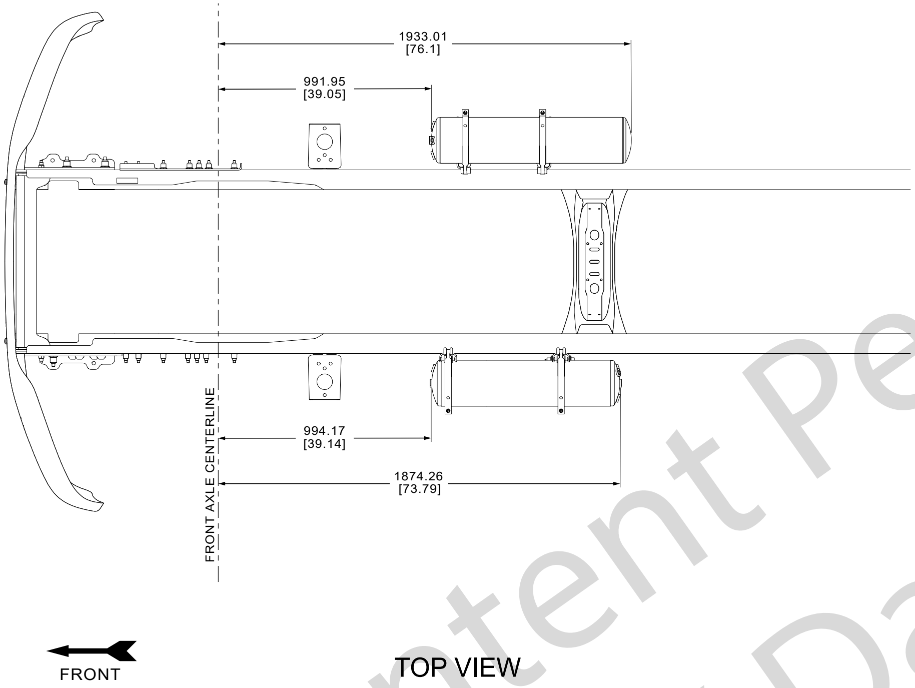
SgRP - SEATING REFERENCE POINTS				
		X	Y	Z
FRONT	LH	3110.2 [122.5]	-459 [-18.1]	2063.9 [81.3]
	CENTER	3084.4 [121.4]	0 [0]	2094 [82.5]
	RH	3110.2 [122.5]	459 [18.1]	2063.9 [81.3]
REAR	LH	4078.1 [160.6]	-479 [-18.9]	2063.9 [81.3]
	CENTER	4078.1 [160.6]	0 [0]	2063.9 [81.3]
	RH	4078.1 [160.6]	479 [18.9]	2063.9 [81.3]

INCH CONVERSION BASED ON 3-DIMENSIONAL METRIC REFERENCE SYSTEM

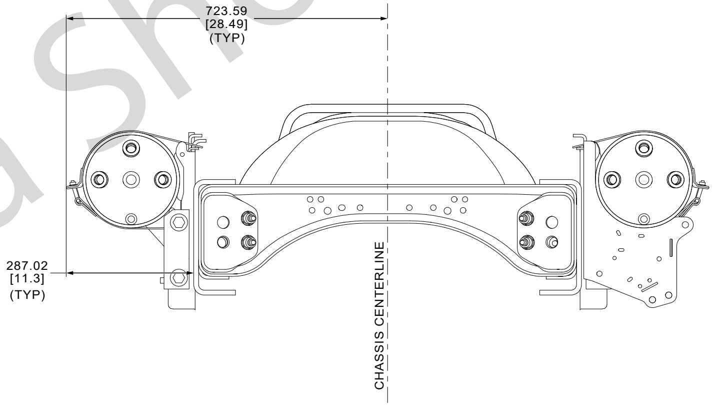
NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
AIR TANK LOCATIONS
REGULAR CAB

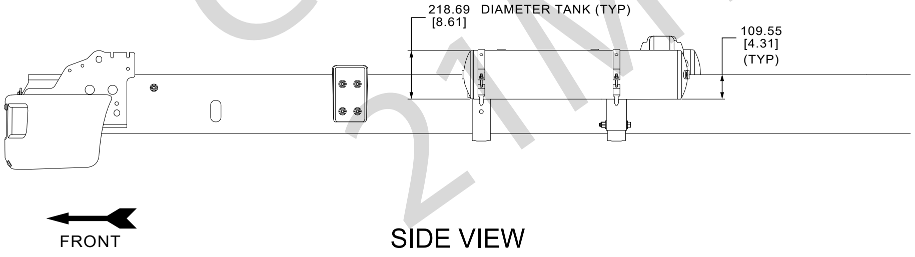
Content Pending
21MY Data Shown


1933.01
[76.1]
991.95
[39.05]
994.17
[39.14]
1874.26
[73.79]
FRONT AXLE CENTERLINE
FRONT

TOP VIEW


723.59
[28.49]
(TYP)
287.02
[11.3]
(TYP)
CHASSIS CENTERLINE

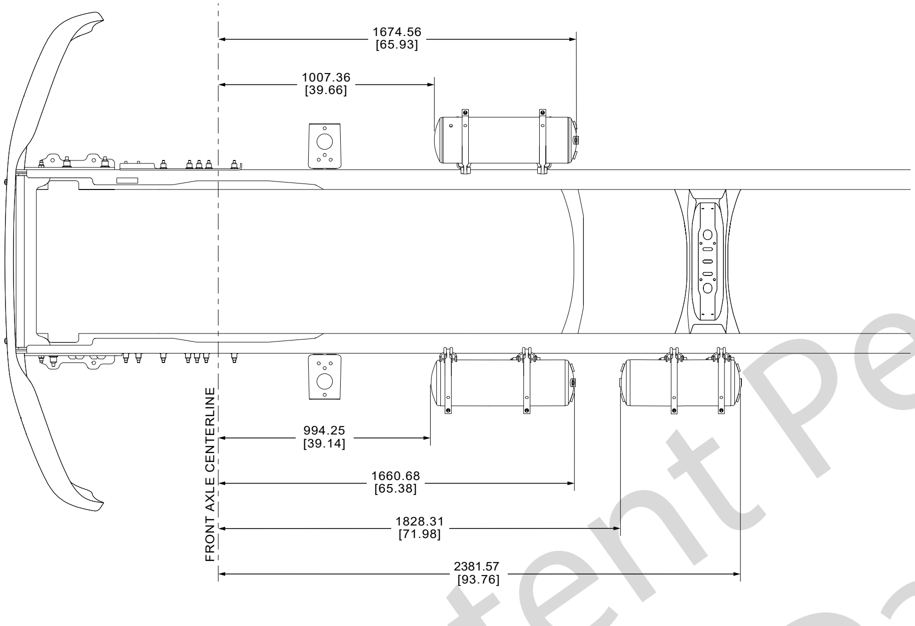
REAR VIEW


218.69 DIAMETER TANK (TYP)
[8.61]
109.55
[4.31]
(TYP)
FRONT

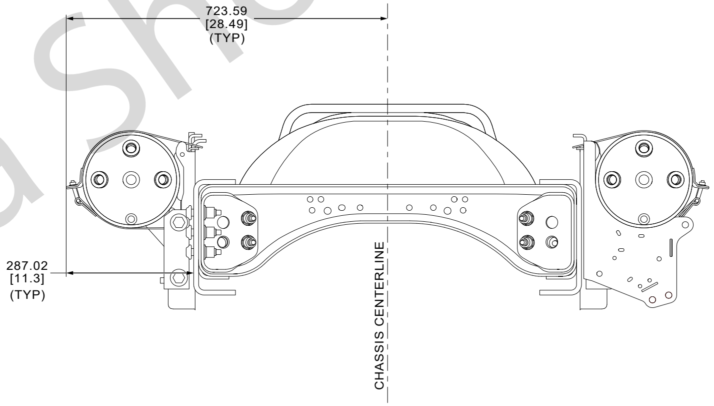
SIDE VIEW

NOTES — [ ] DIMENSIONS ARE INCHES.
— BASED ON FRAME ORDER CODE 533.

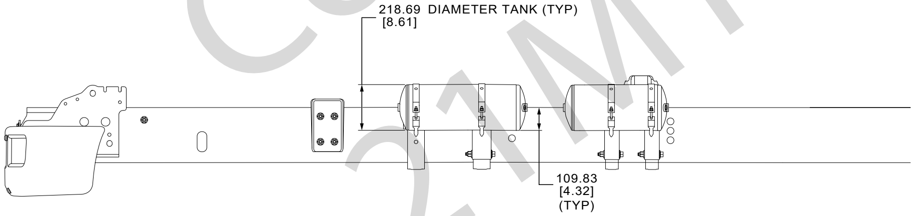
F650/750 SUPER DUTY
AIR TANK LOCATIONS
SUPER CAB


1674.56
[65.93]
1007.36
[39.66]
FRONT AXLE CENTERLINE
994.25
[39.14]
1660.68
[65.38]
1828.31
[71.98]
2381.57
[93.76]
FRONT

TOP VIEW


723.59
[28.49]
(TYP)
287.02
[11.3]
(TYP)
CHASSIS CENTERLINE

REAR VIEW


218.69 DIAMETER TANK (TYP)
[8.61]
109.83
[4.32]
(TYP)
FRONT

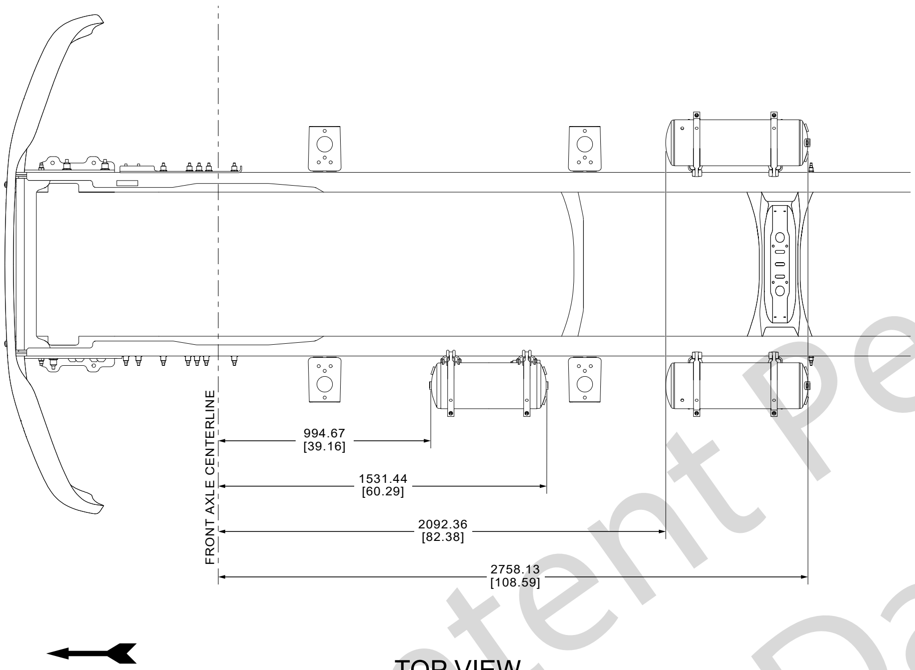
SIDE VIEW

Content Pending
21MY Data Shown

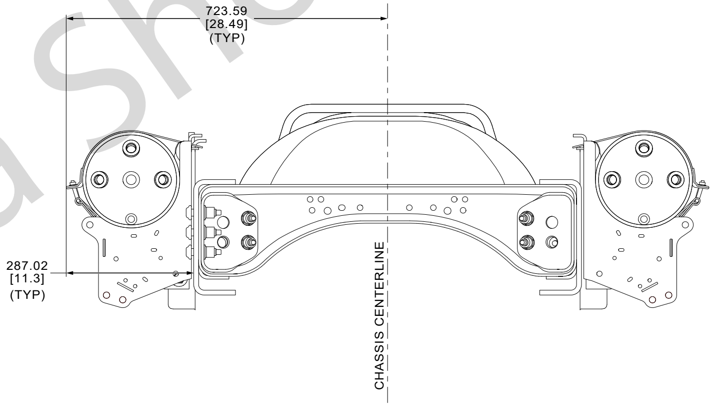
NOTES — [ ] DIMENSIONS ARE INCHES.
— BASED ON FRAME ORDER CODE 533.

F650/750 SUPER DUTY
AIR TANK LOCATIONS
CREW CAB

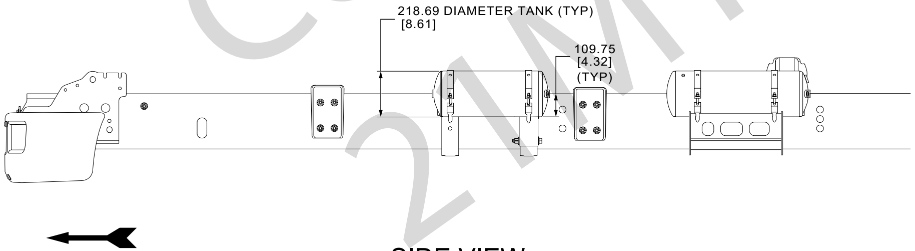
Content Pending
21MY Data Shown


FRONT AXLE CENTERLINE
994.67
[39.16]
1531.44
[60.29]
2092.36
[82.38]
2758.13
[108.59]
FRONT

TOP VIEW


723.59
[28.49]
(TYP)
287.02
[11.3]
(TYP)
CHASSIS CENTERLINE

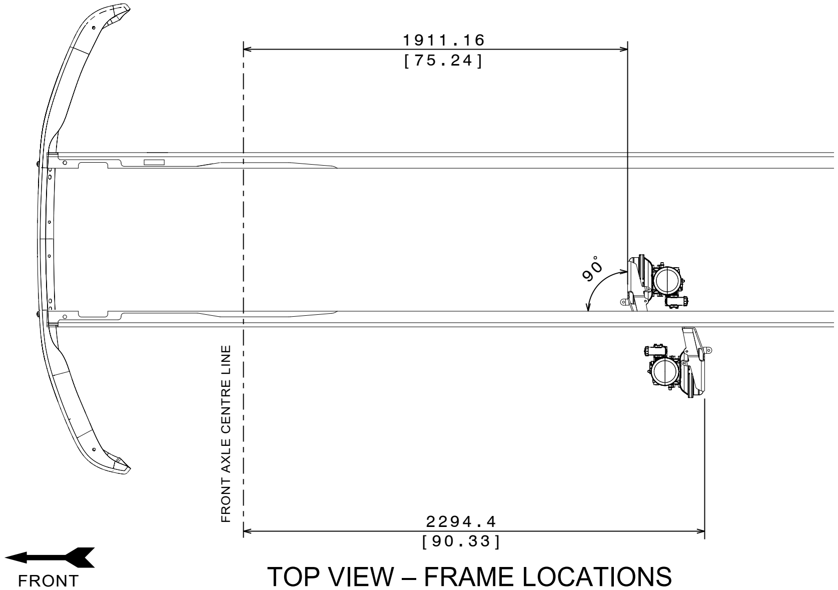
REAR VIEW


218.69 DIAMETER TANK (TYP)
[8.61]
109.75
[4.32]
(TYP)
FRONT

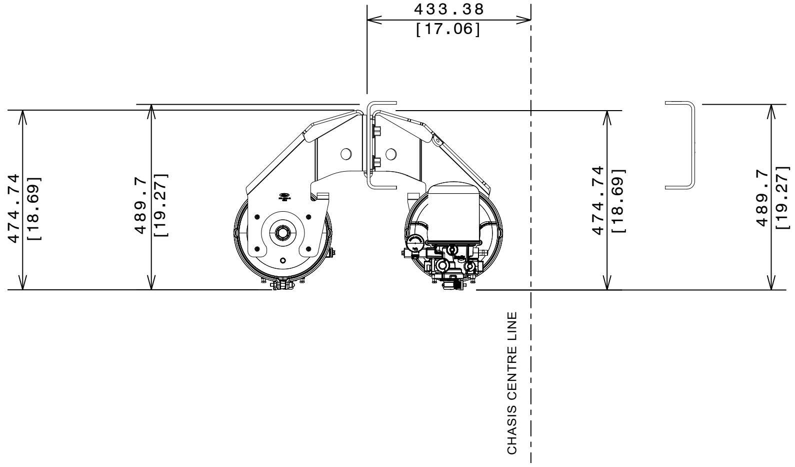
SIDE VIEW

NOTES — [ ] DIMENSIONS ARE INCHES.
— BASED ON FRAME ORDER CODE 533.

F650/750 SUPER DUTY
AIR DRYER LOCATIONS


1911.16
[75.24]
90°
FRONT AXLE CENTRE LINE
2294.4
[90.33]
FRONT

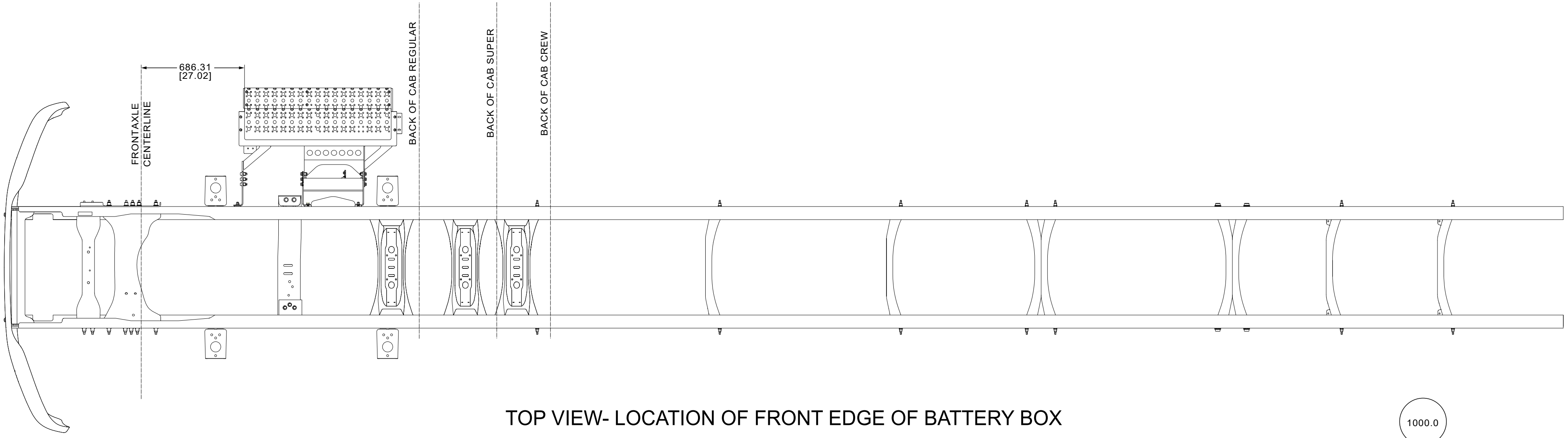
TOP VIEW – FRAME LOCATIONS


433.38
[17.06]
474.74
[18.69]
489.7
[19.27]
474.74
[18.69]
489.7
[19.27]
CHASIS CENTRE LINE

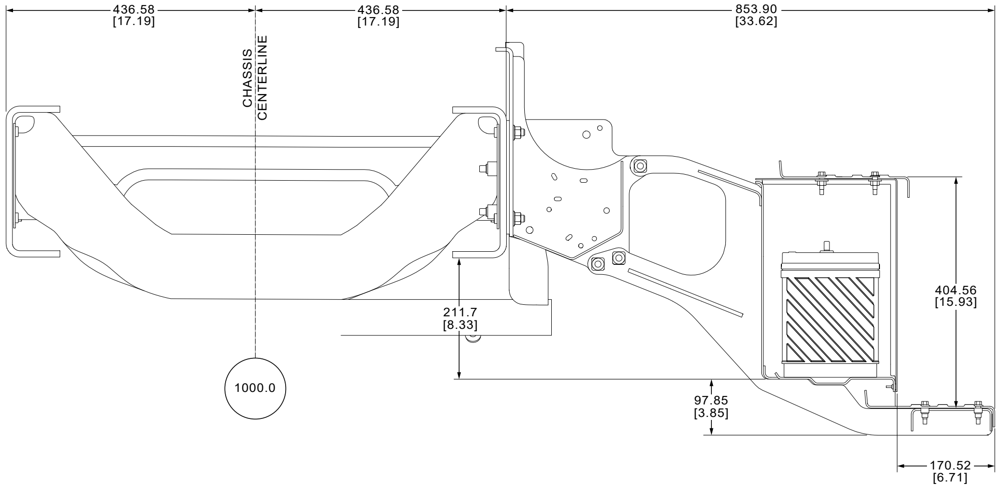
REAR VIEW – INSIDE / OUTSIDE FRAME RAIL DIMENSIONS

NOTES — [ ] DIMENSIONS ARE INCHES.

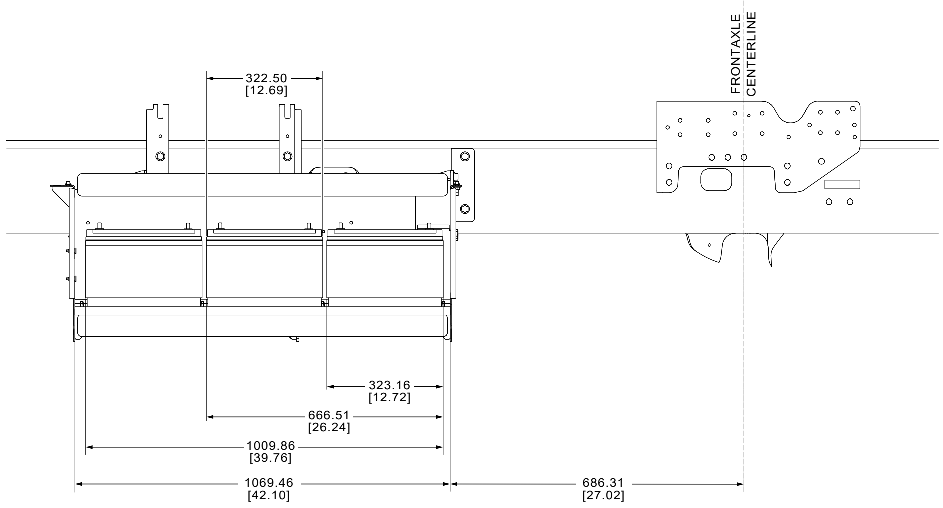
F650/750 SUPER DUTY
BATTERY BOX LOCATION
DIESEL ENGINE


686.31
[27.02]
FRONTAXLE CENTERLINE
BACK OF CAB REGULAR
BACK OF CAB SUPER
BACK OF CAB CREW

TOP VIEW- LOCATION OF FRONT EDGE OF BATTERY BOX


436.58
[17.19]
436.58
[17.19]
853.90
[33.62]
CHASSIS CENTERLINE
211.7
[8.33]
1000.0
404.56
[15.93]
97.85
[3.85]
170.52
[6.71]

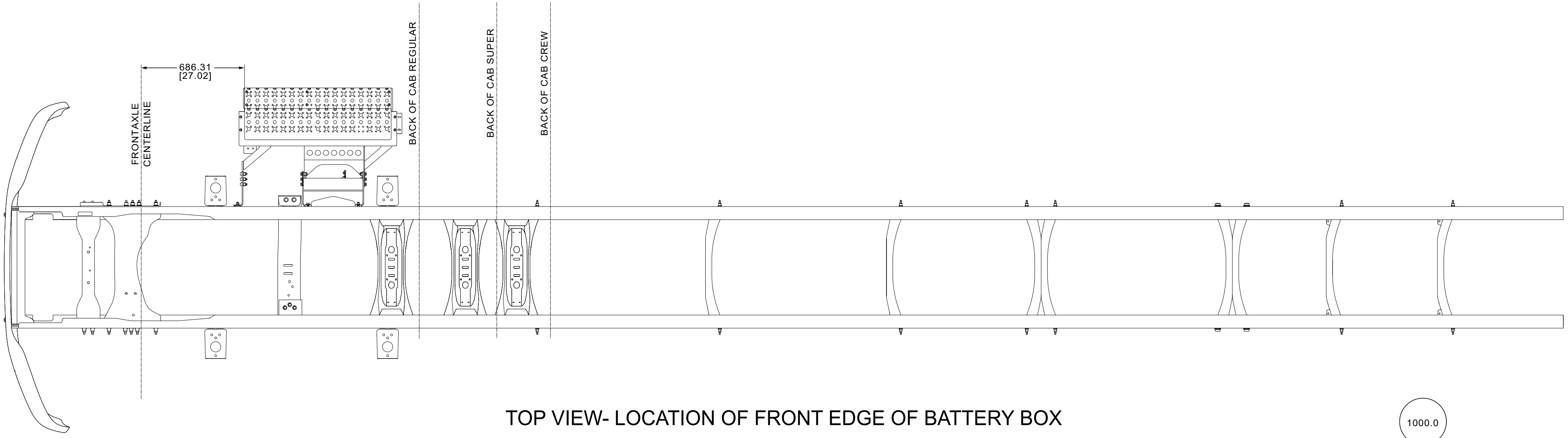
REAR VIEW - OUTSIDE FRAME RAIL DIMENSIONS


1000.0
FRONTAXLE CENTERLINE
322.50
[12.69]
323.16
[12.72]
666.51
[26.24]
1009.86
[39.76]
1069.46
[42.10]
686.31
[27.02]

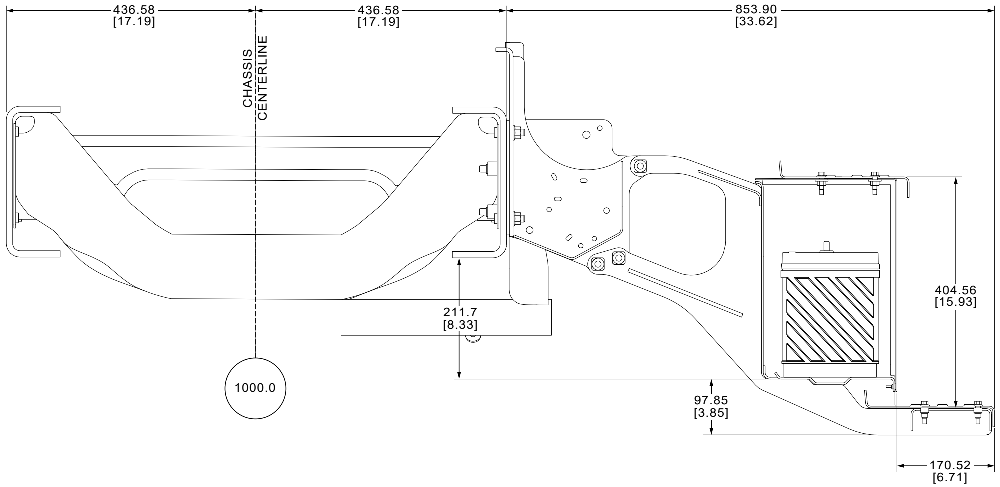
SIDE VIEW - OUTSIDE FRAME RAIL DIMENSIONS

NOTES — [ ] DIMENSIONS ARE INCHES.

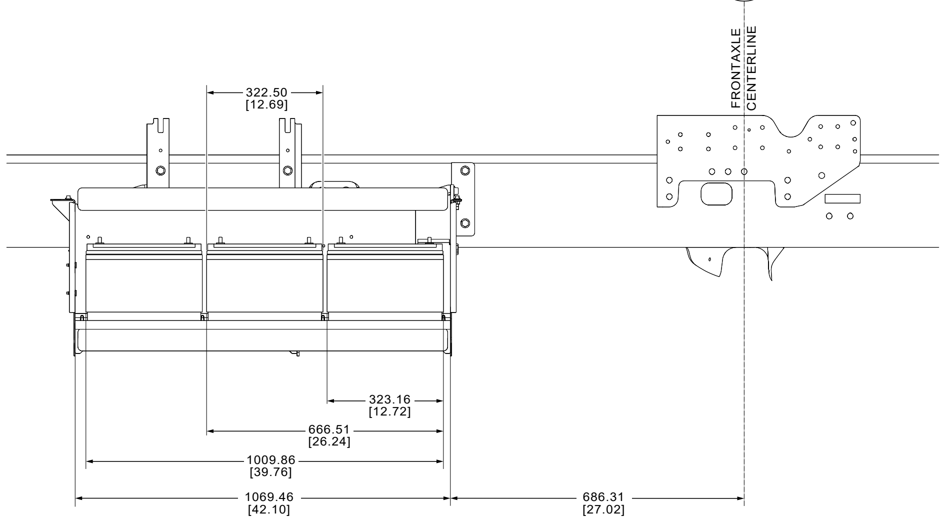
F650/750 SUPER DUTY
BATTERY BOX LOCATION
GASOLINE ENGINE


686.31
[27.02]
FRONTAXLE
CENTERLINE
BACK OF CAB REGULAR
BACK OF CAB SUPER
BACK OF CAB CREW

TOP VIEW- LOCATION OF FRONT EDGE OF BATTERY BOX


436.58
[17.19]
436.58
[17.19]
853.90
[33.62]
CHASSIS
CENTERLINE
211.7
[8.33]
1000.0
404.56
[15.93]
97.85
[3.85]
170.52
[6.71]

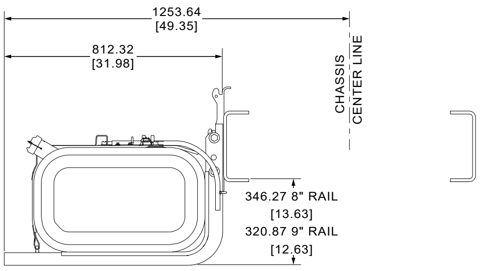
REAR VIEW - OUTSIDE FRAME RAIL DIMENSIONS


1000.0
FRONTAXLE
CENTERLINE
322.50
[12.69]
323.16
[12.72]
666.51
[26.24]
1009.86
[39.76]
1069.46
[42.10]
686.31
[27.02]

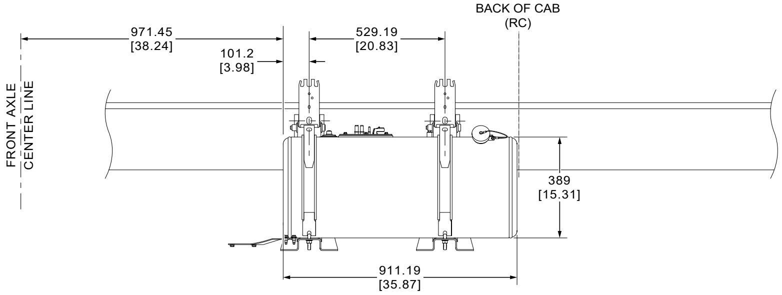
SIDE VIEW - OUTSIDE FRAME RAIL DIMENSIONS

NOTES — [ ] DIMENSIONS ARE INCHES.

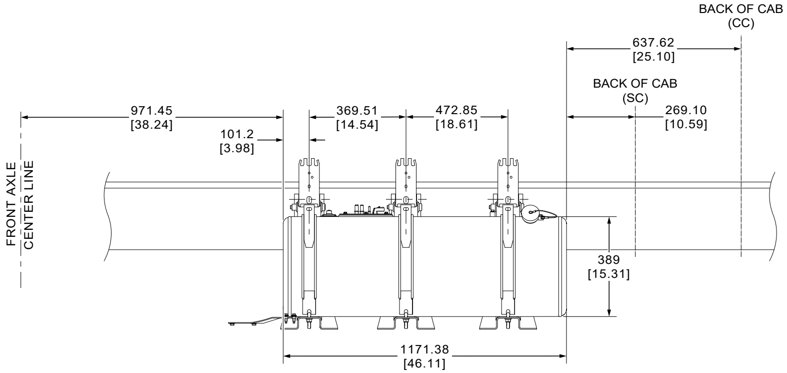
F650/750 SUPER DUTY
DIESEL FUEL TANK LOCATIONS
LEFT SIDE MOUNTING


1253.64
[49.35]
812.32
[31.98]
CHASSIS
CENTER LINE
346.27 8" RAIL
[13.63]
320.87 9" RAIL
[12.63]

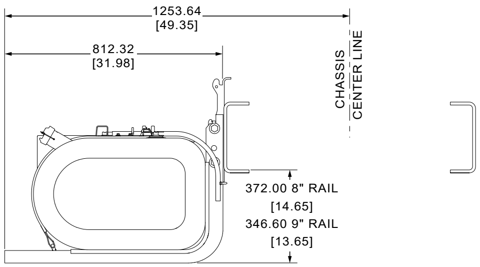
REAR VIEW: 15" DEEP 50/65 GALLON TANK


BACK OF CAB
(RC)
971.45
[38.24]
101.2
[3.98]
529.19
[20.83]
FRONT AXLE
CENTER LINE
389
[15.31]
911.19
[35.87]

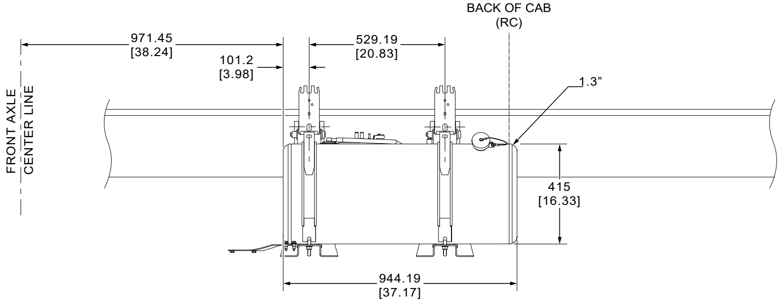
SIDE VIEW: 15" DEEP 50 GALLON TANK (REGULAR CAB)


BACK OF CAB
(CC)
637.62
[25.10]
BACK OF CAB
(SC)
269.10
[10.59]
971.45
[38.24]
101.2
[3.98]
369.51
[14.54]
472.85
[18.61]
FRONT AXLE
CENTER LINE
389
[15.31]
1171.38
[46.11]

SIDE VIEW: 15" DEEP 65 GALLON TANK (SC & CC)


1253.64
[49.35]
812.32
[31.98]
CHASSIS
CENTER LINE
372.00 8" RAIL
[14.65]
346.60 9" RAIL
[13.65]

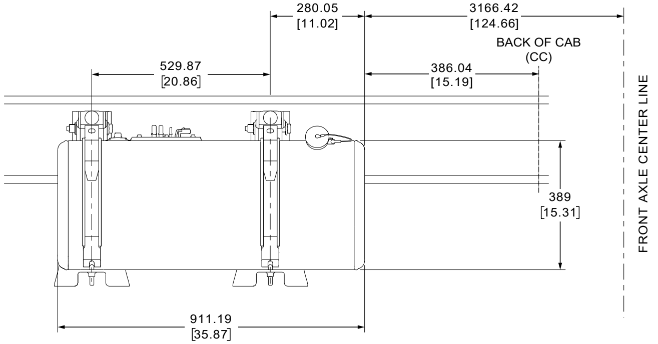
REAR VIEW: 16" DEEP 55 GALLON TANK


BACK OF CAB
(RC)
971.45
[38.24]
101.2
[3.98]
529.19
[20.83]
1.3"
FRONT AXLE
CENTER LINE
415
[16.33]
944.19
[37.17]

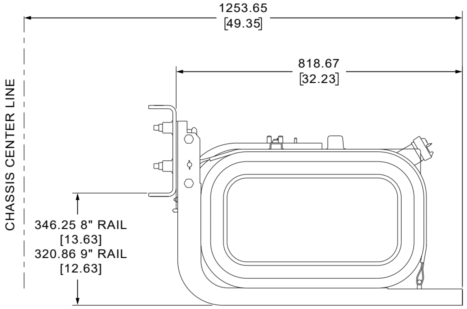
SIDE VIEW: 16" DEEP 55 GALLON TANK (REGULAR CAB)

NOTES — [ ] DIMENSIONS ARE INCHES.

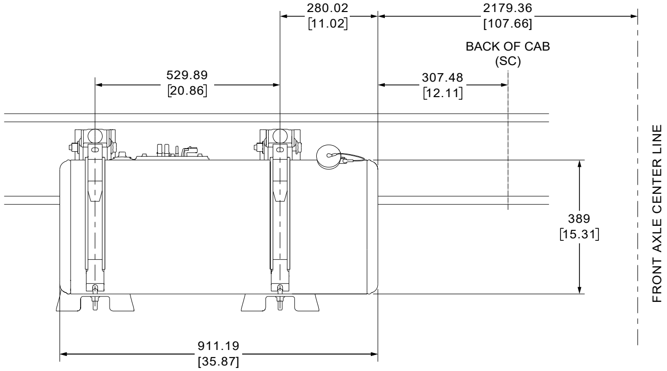
F650/750 SUPER DUTY
DIESEL FUEL TANK LOCATIONS
RIGHT SIDE MOUNTING
*FOR DUAL TANKS ONLY


280.05
[11.02]
3166.42
[124.66]
BACK OF CAB
(CC)
529.87
[20.86]
386.04
[15.19]
FRONT AXLE CENTER LINE
389
[15.31]
911.19
[35.87]

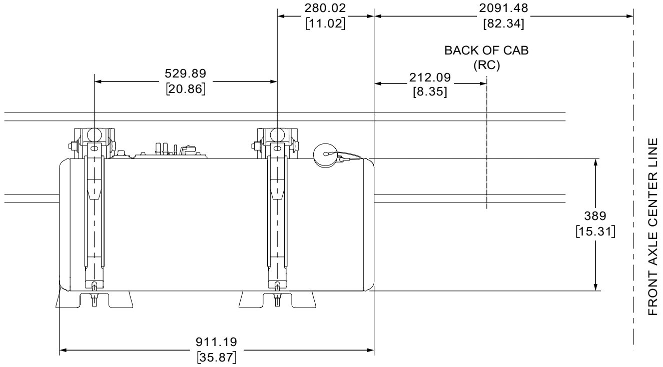
SIDE VIEW: 15" DEEP 50 GALLON TANK (CREW CAB)


1253.65
[49.35]
818.67
[32.23]
CHASSIS CENTER LINE
346.25 8" RAIL
[13.63]
320.86 9" RAIL
[12.63]

REAR VIEW: 15" DEEP 50 GALLON TANK (CC , SC & RC)


280.02
[11.02]
2179.36
[107.66]
BACK OF CAB
(SC)
529.89
[20.86]
307.48
[12.11]
389
[15.31]
FRONT AXLE CENTER LINE
911.19
[35.87]

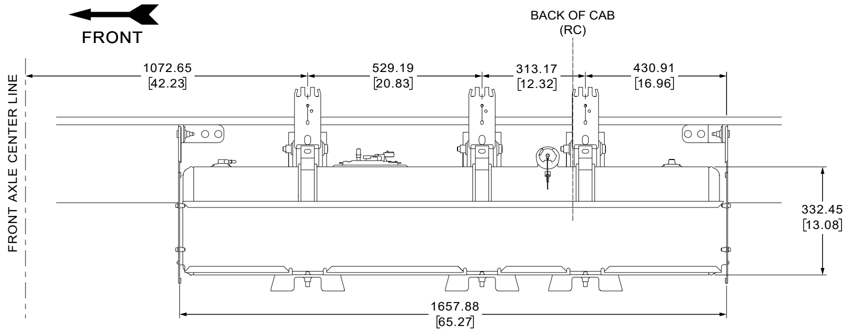
SIDE VIEW: 15" DEEP 50 GALLON TANK (SUPER CAB)


280.02
[11.02]
2091.48
[82.34]
BACK OF CAB
(RC)
529.89
[20.86]
212.09
[8.35]
389
[15.31]
FRONT AXLE CENTER LINE
911.19
[35.87]

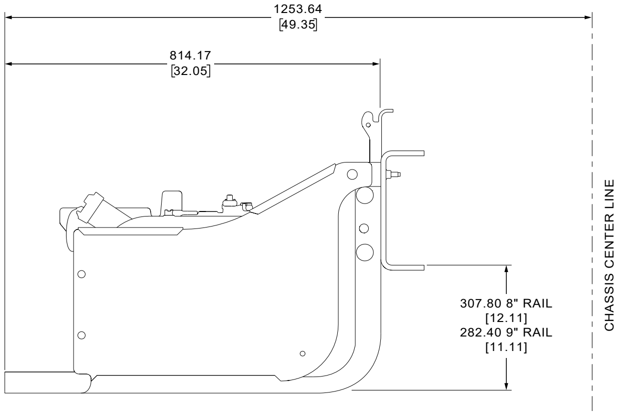
SIDE VIEW: 15" DEEP 50 GALLON TANK (REGULAR CAB)

NOTES — [ ] DIMENSIONS ARE INCHES.

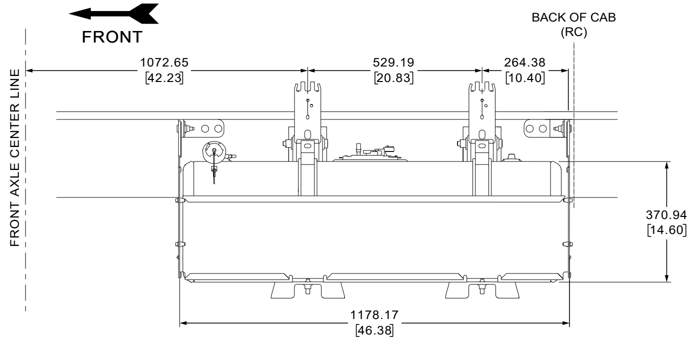
F650/750 SUPER DUTY
GASOLINE FUEL TANK LOCATIONS
LEFT SIDE MOUNT UNDER CAB


FRONT
BACK OF CAB
(RC)
FRONT AXLE CENTER LINE
1072.65
[42.23]
529.19
[20.83]
313.17
[12.32]
430.91
[16.96]
332.45
[13.08]
1657.88
[65.27]

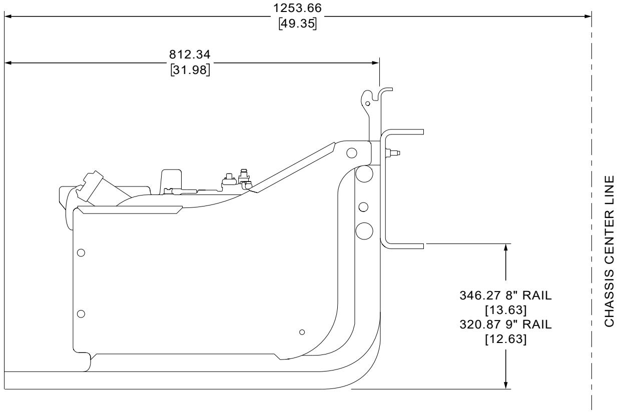
SIDE VIEW – 13" DEEP 60 GALLON TANK (REGULAR CAB)


1253.64
[49.35]
814.17
[32.05]
307.80 8" RAIL
[12.11]
282.40 9" RAIL
[11.11]
CHASSIS CENTER LINE

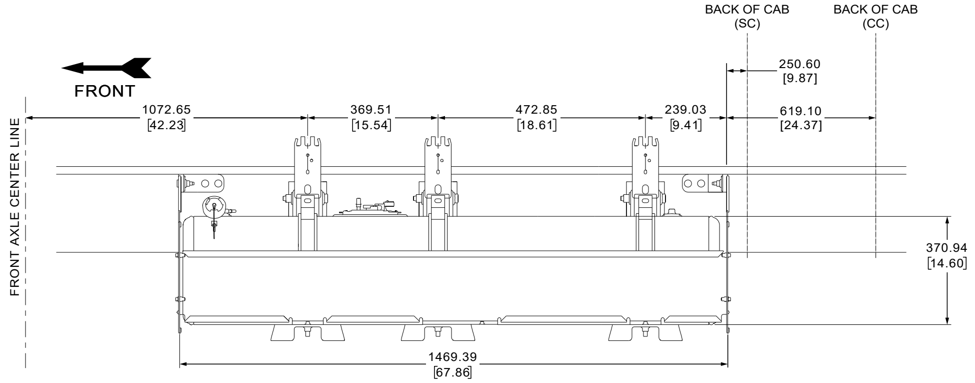
REAR VIEW – 13" DEEP 60 GALLON TANK
(REGULAR CAB)


FRONT
BACK OF CAB
(RC)
FRONT AXLE CENTER LINE
1072.65
[42.23]
529.19
[20.83]
264.38
[10.40]
370.94
[14.60]
1178.17
[46.38]

SIDE VIEW – 14" DEEP 50 GALLON TANK (REGULAR CAB)


1253.66
[49.35]
812.34
[31.98]
346.27 8" RAIL
[13.63]
320.87 9" RAIL
[12.63]
CHASSIS CENTER LINE

REAR VIEW – 14" DEEP 50/60 GALLON TANK

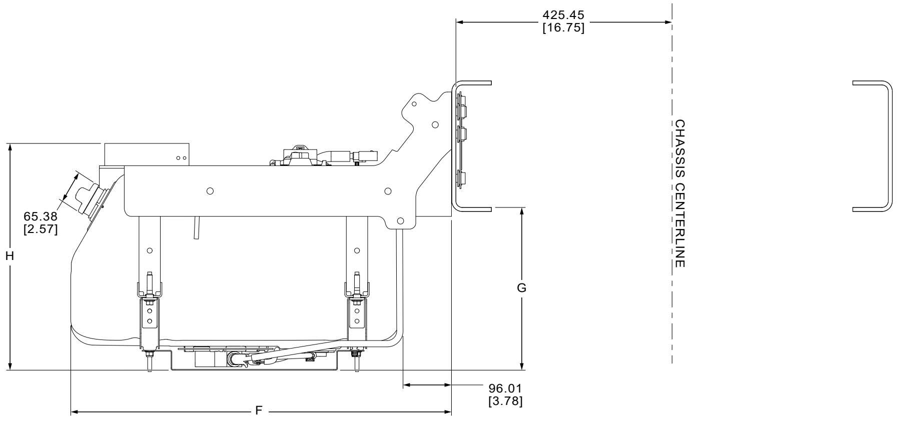

BACK OF CAB
(SC)
BACK OF CAB
(CC)
FRONT
FRONT AXLE CENTER LINE
250.60
[9.87]
1072.65
[42.23]
369.51
[15.54]
472.85
[18.61]
239.03
[9.41]
619.10
[24.37]
370.94
[14.60]
1469.39
[67.86]

SIDE VIEW – 14" DEEP 60 GALLON TANK (SC & CC)

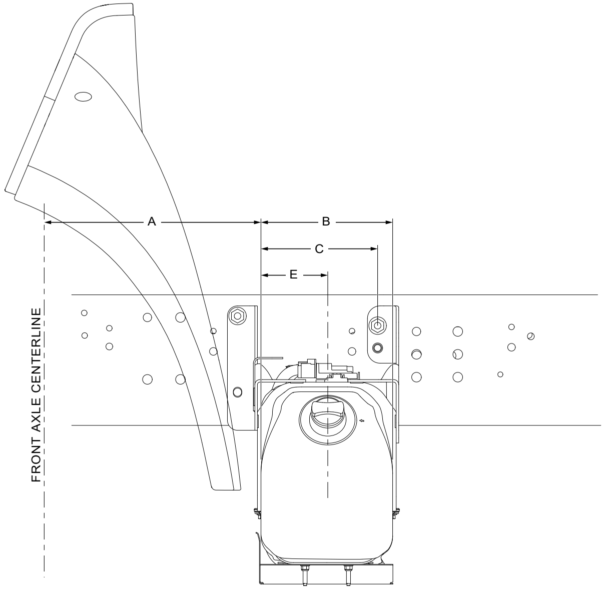
NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
DIESEL EXHAUST FLUID (UREA) TANK LOCATIONS
ALL MODELS

DEF (Urea) Tank Dimension Description	Dimension	View(s)	All Cab
DEF tank capacity(fuel tank depth) / mounting side			8 Gal/ RSM
Front axle CL to forward face of tank / box	A	Top	684.6 / 27"
Width of tank / box	B	L	259.0 / 10.2"
Forward face to CL frame hole	C	L	229.5 / 9.0"
CL bracket (frame hole) to bracket (frame hole)	D	Rear	275.6 / 10.9"
Forward face to fill neck CL	E	Top	129.5 / 5.1"
O/S frame to O/S tank / box	F	Rear	748.2 / 29.5"
1000 to bottom of tank / box	G	Rear	For 8.5 in Deep Frame 345.8 / 13.6" For 9.5 in Deep Frame 320.4 / 12.6"
Bottom of tank / box to top of tank / box	H	Rear	446.4 / 17.6"



REAR VIEW

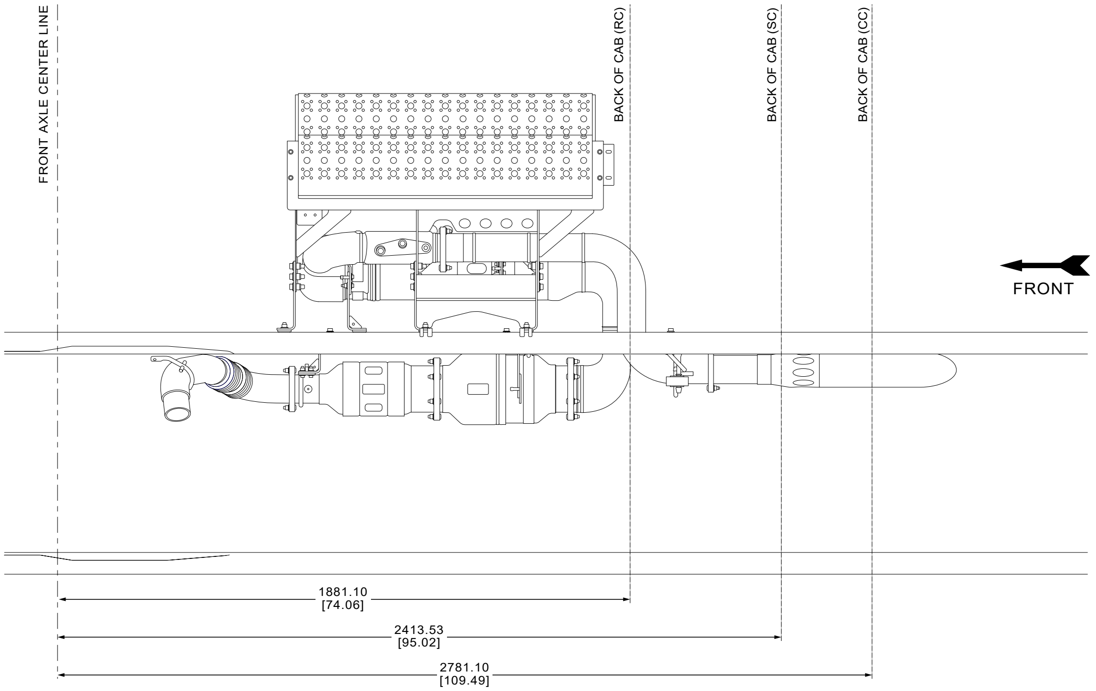


SIDE VIEW

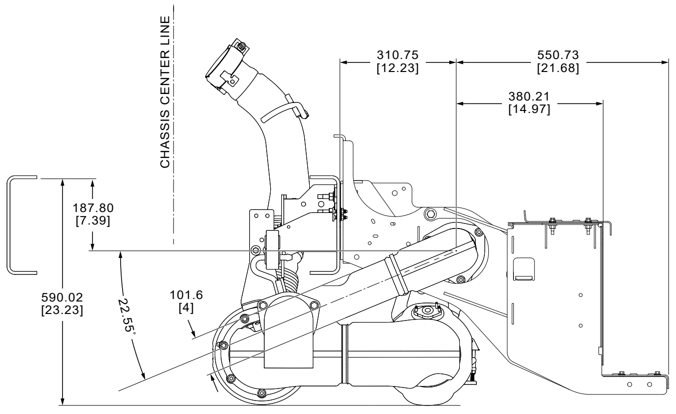
CAUTION: Ford Motor Company does not approve of relocating any components of the Diesel Exhaust Fluid (DEF) system and/or the exhaust system

NOTES — [ ] DIMENSIONS ARE INCHES.

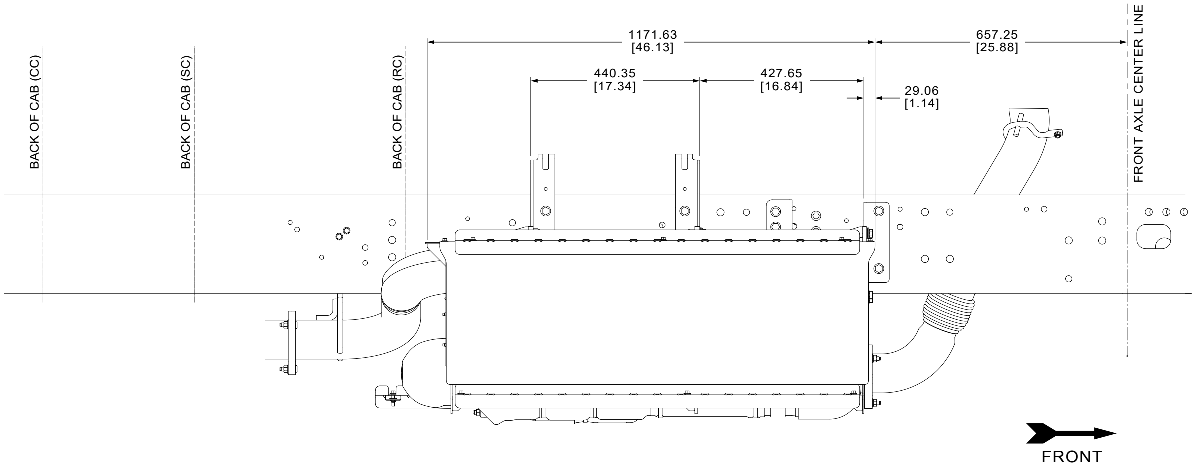
F650/750 SUPER DUTY
DIESEL EXHAUST SYSTEMS
HORIZONTAL SWITCHBACK


FRONT AXLE CENTER LINE
BACK OF CAB (RC)
BACK OF CAB (SC)
BACK OF CAB (CC)
FRONT
1881.10
[74.06]
2413.53
[95.02]
2781.10
[109.49]

TOP VIEW


CHASSIS CENTER LINE
310.75
[12.23]
550.73
[21.68]
380.21
[14.97]
187.80
[7.39]
590.02
[23.23]
22.55°
101.6
[4]

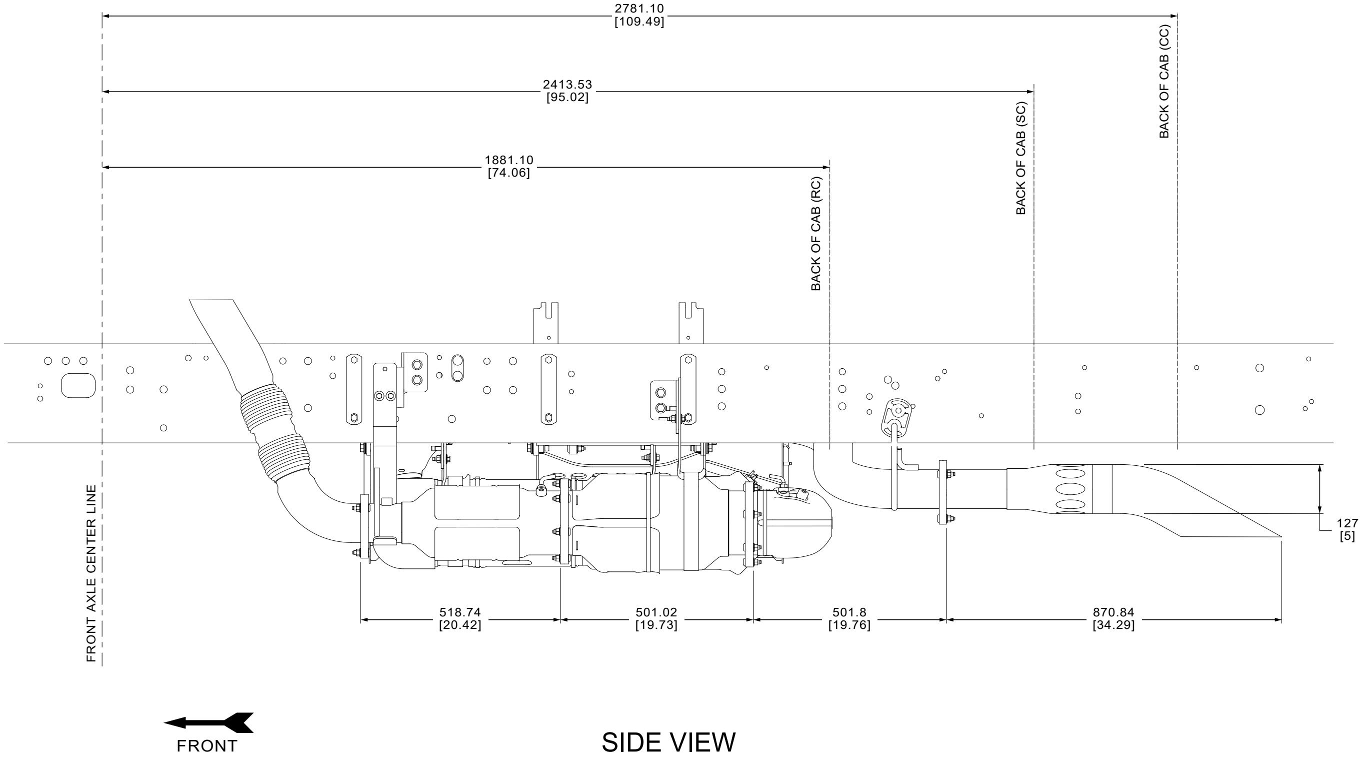
REAR VIEW


BACK OF CAB (CC)
BACK OF CAB (SC)
BACK OF CAB (RC)
1171.63
[46.13]
657.25
[25.88]
440.35
[17.34]
427.65
[16.84]
29.06
[1.14]
FRONT AXLE CENTER LINE
FRONT

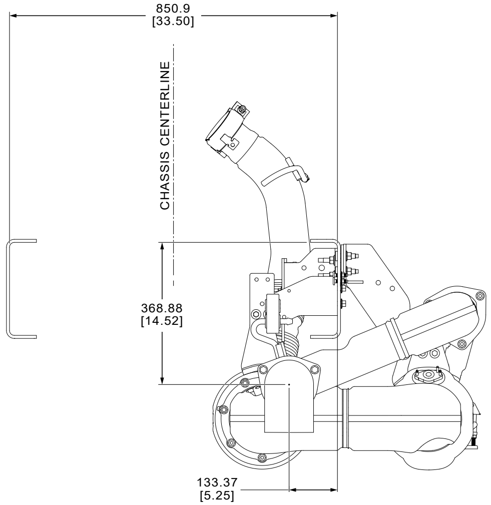
SIDE VIEW

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
DIESEL EXHAUST SYSTEMS
HORIZONTAL SWITCHBACK (Cont'd)


2781.10
[109.49]
2413.53
[95.02]
1881.10
[74.06]
BACK OF CAB (CC)
BACK OF CAB (SC)
BACK OF CAB (RC)
FRONT AXLE CENTER LINE
127
[5]
518.74
[20.42]
501.02
[19.73]
501.8
[19.76]
870.84
[34.29]
FRONT

SIDE VIEW


850.9
[33.50]
CHASSIS CENTERLINE
368.88
[14.52]
133.37
[5.25]

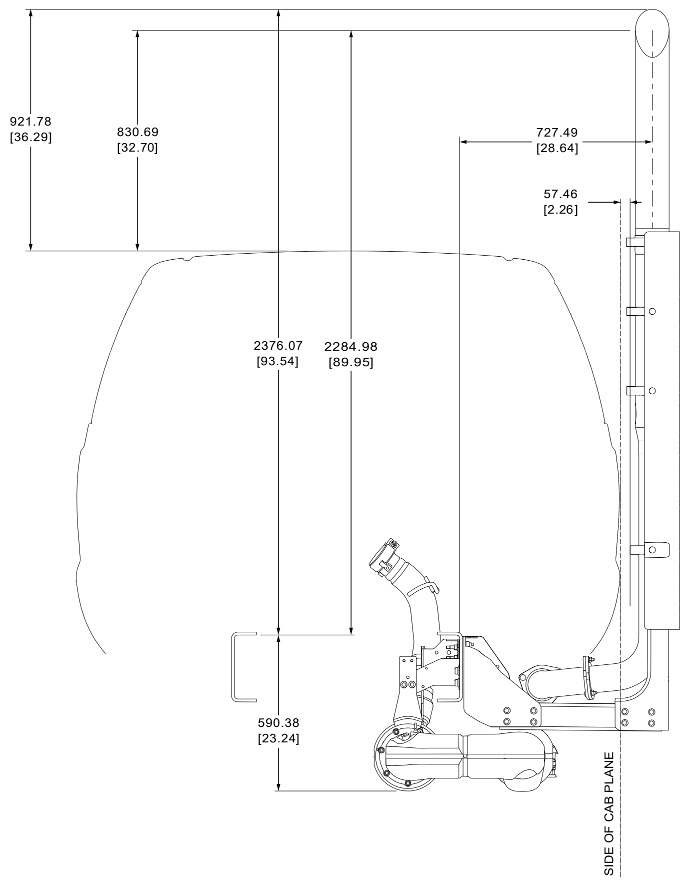
REAR VIEW

NOTES — [ ] DIMENSIONS ARE INCHES.

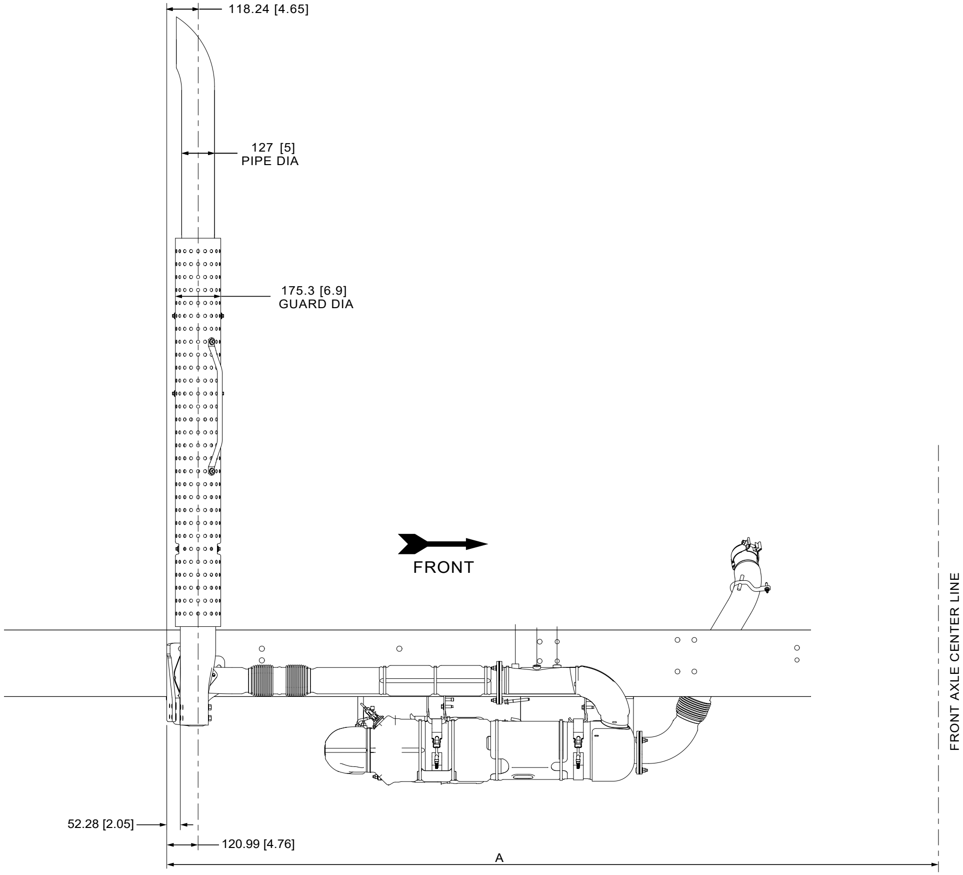
F650/750 SUPER DUTY
DIESEL EXHAUST SYSTEM
6.7L VERTICAL SWITCHBACK

CENTER LINE OF FRONT AXLE TO REAR VERTICAL STACK BRACKET

Dimension	Regular Cab	Super Cab	Crew Cab
A	1937.44 [76.27]	2500.52 [98.44]	2836.44 [111.67]


921.78
[36.29]
830.69
[32.70]
727.49
[28.64]
57.46
[2.26]
2376.07
[93.54]
2284.98
[89.95]
590.38
[23.24]
SIDE OF CAB PLANE

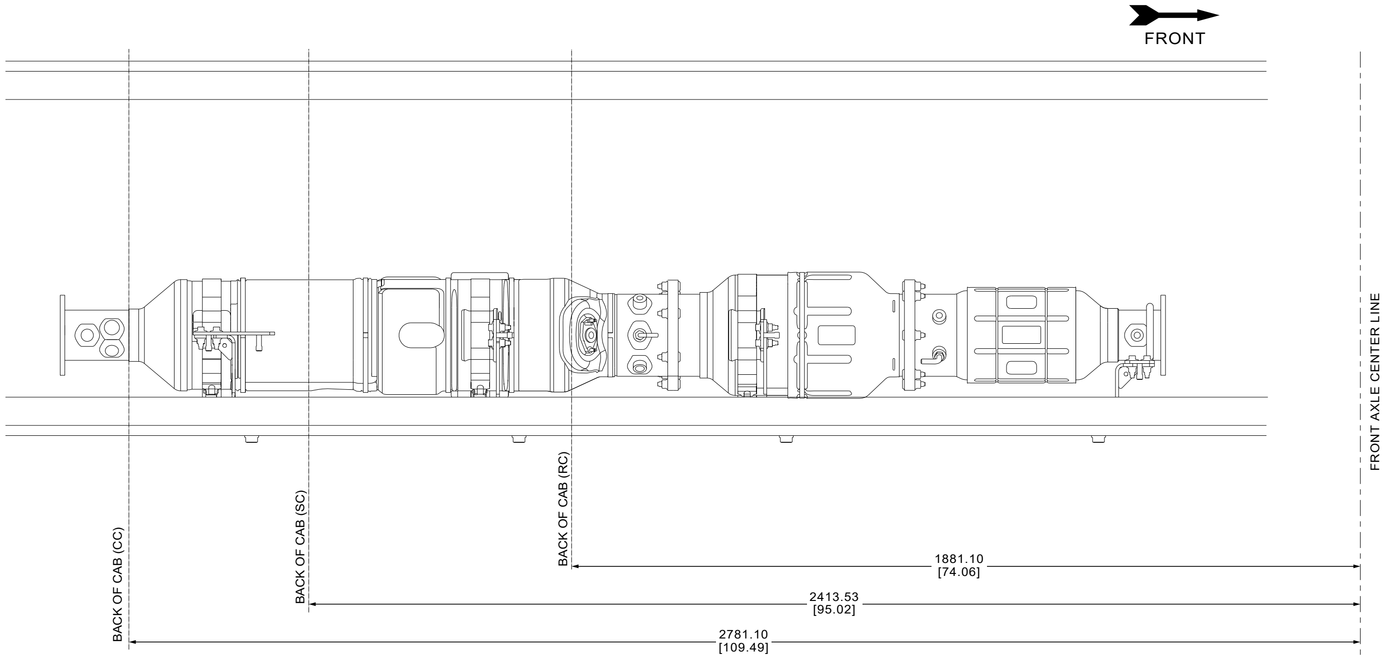
REAR VIEW


118.24 [4.65]
127 [5]
PIPE DIA
175.3 [6.9]
GUARD DIA
FRONT
FRONT AXLE CENTER LINE
52.28 [2.05]
120.99 [4.76]
A

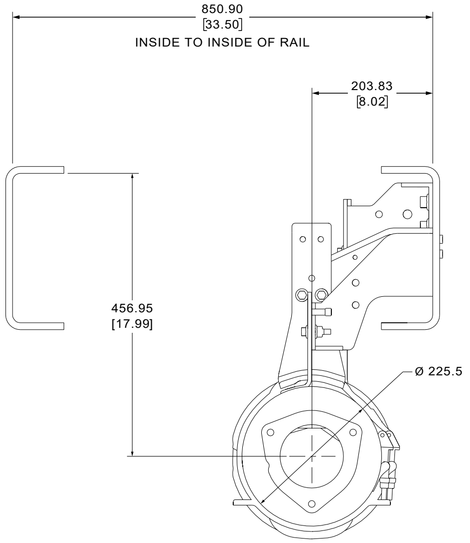
SIDE VIEW

NOTES — [ ] DIMENSIONS ARE INCHES.

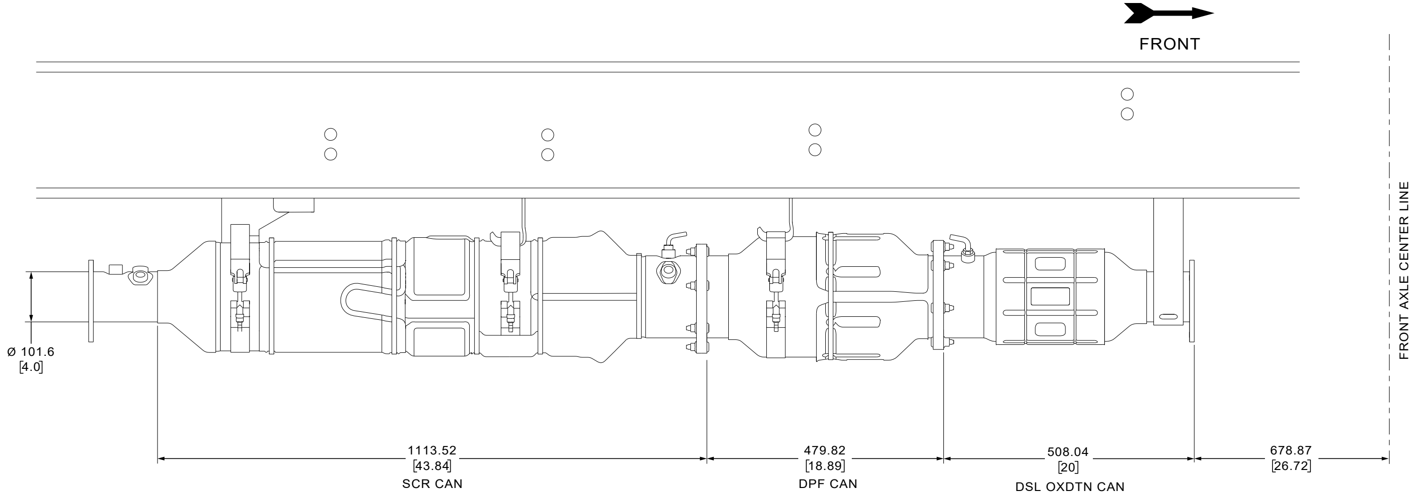
F650/750 SUPER DUTY
DIESEL EXHAUST SYSTEMS
6.7L INLINE


FRONT
FRONT AXLE CENTER LINE
BACK OF CAB (CC)
BACK OF CAB (SC)
BACK OF CAB (RC)
1881.10
[74.06]
2413.53
[95.02]
2781.10
[109.49]

TOP VIEW - COMMON TO ALL INLINE EXHAUSTS


850.90
[33.50]
INSIDE TO INSIDE OF RAIL
203.83
[8.02]
456.95
[17.99]
Ø 225.5

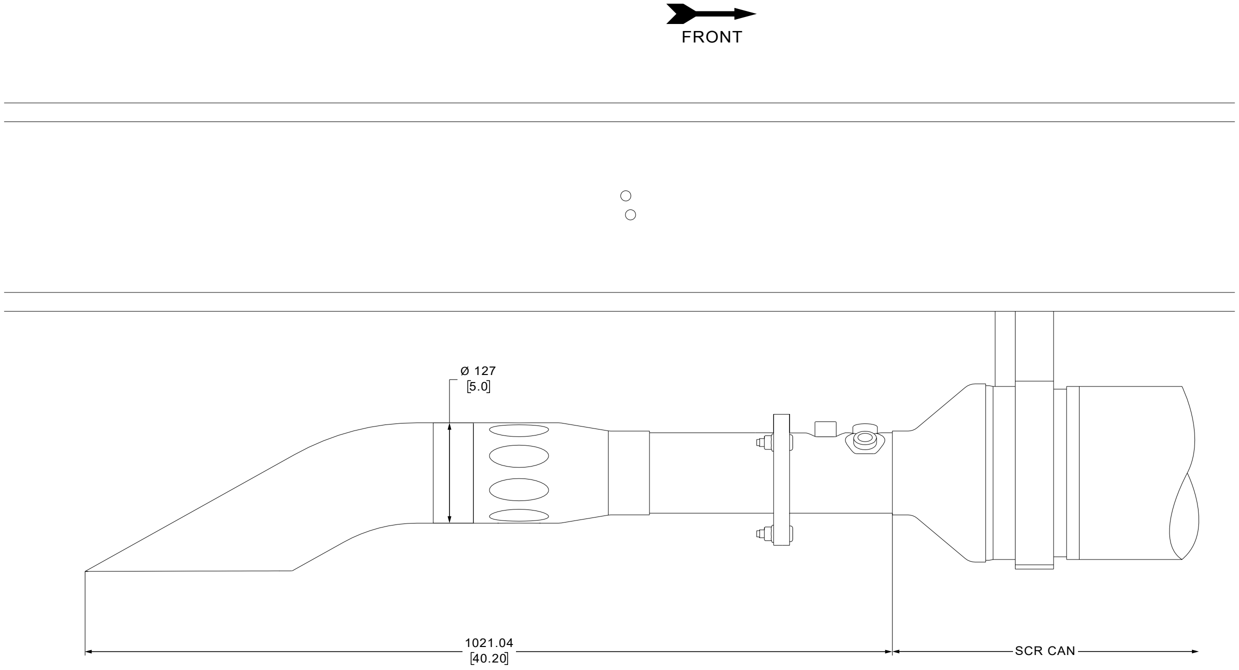
REAR VIEW - COMMON TO ALL INLINE EXHAUSTS


FRONT
FRONT AXLE CENTER LINE
Ø 101.6
[4.0]
1113.52
[43.84]
SCR CAN
479.82
[18.89]
DPF CAN
508.04
[20]
DSL OXDTN CAN
678.87
[26.72]

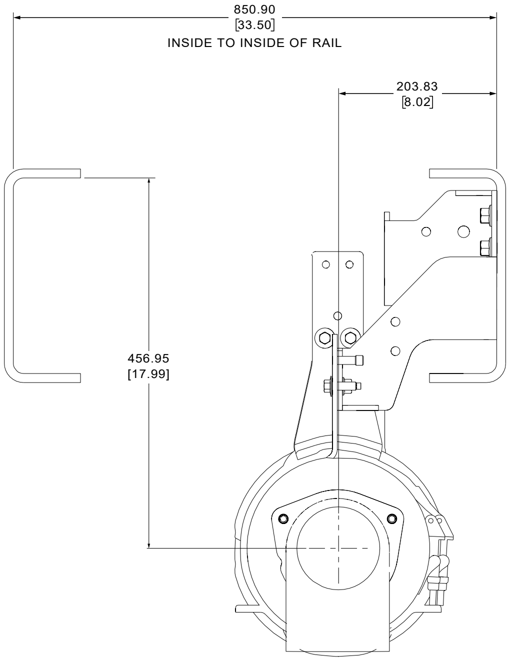
RH SIDE VIEW - COMMON TO ALL INLINE EXHAUSTS

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
DIESEL EXHAUST SYSTEMS
6.7L INLINE (Cont'd)


FRONT
Ø 127
[5.0]
1021.04
[40.20]
SCR CAN

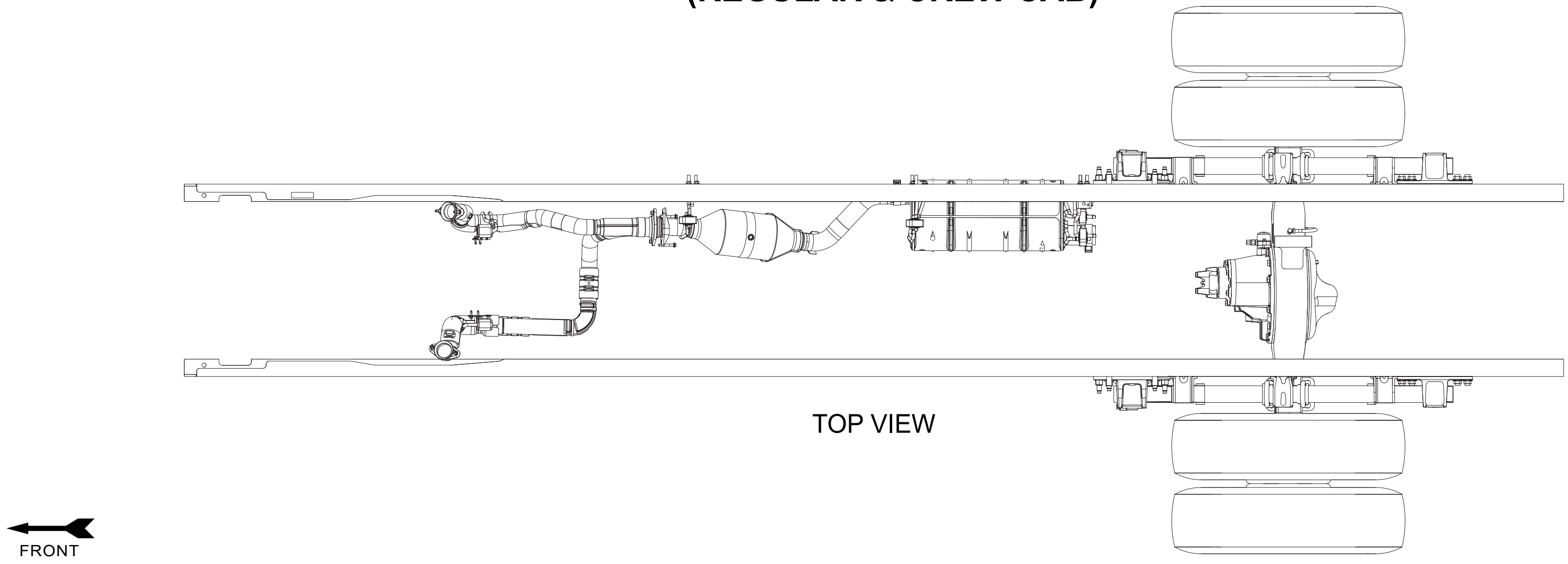
LEFT SIDE VIEW – RIGHT SIDE EXIT BEFORE REAR AXLE


850.90
[33.50]
INSIDE TO INSIDE OF RAIL
203.83
[8.02]
456.95
[17.99]

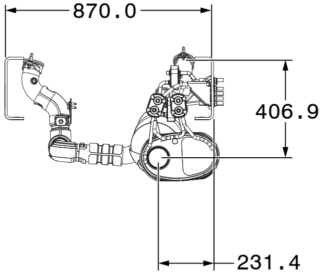
REAR VIEW - RIGHT SIDE
EXIT BEFORE REAR AXLE

NOTES — [ ] DIMENSIONS ARE INCHES.

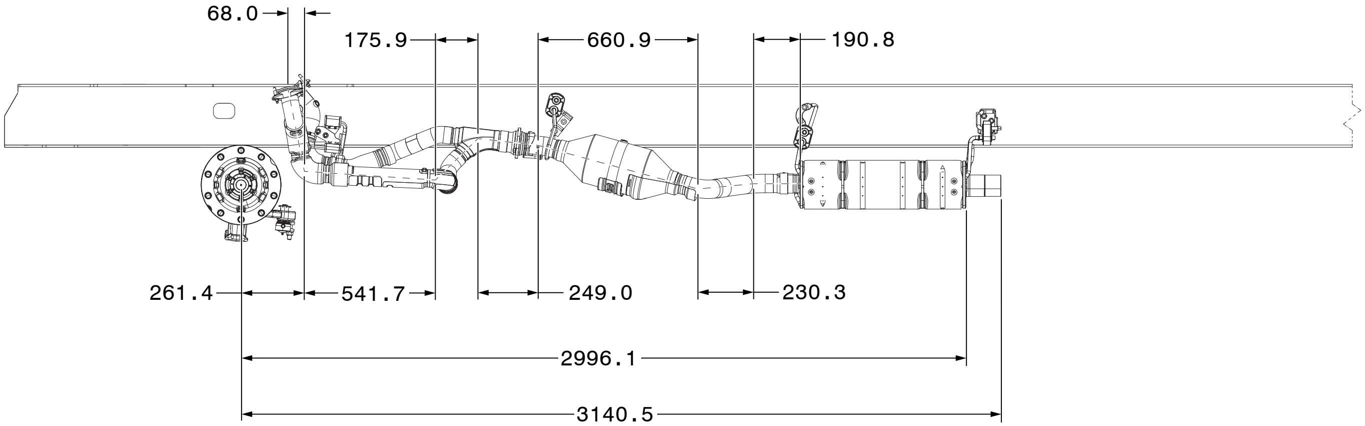
F650/750 SUPER DUTY
GASOLINE EXHAUST SYSTEM
HORIZONTAL INLINE
(REGULAR & CREW CAB)



TOP VIEW


870.0
406.9
231.4

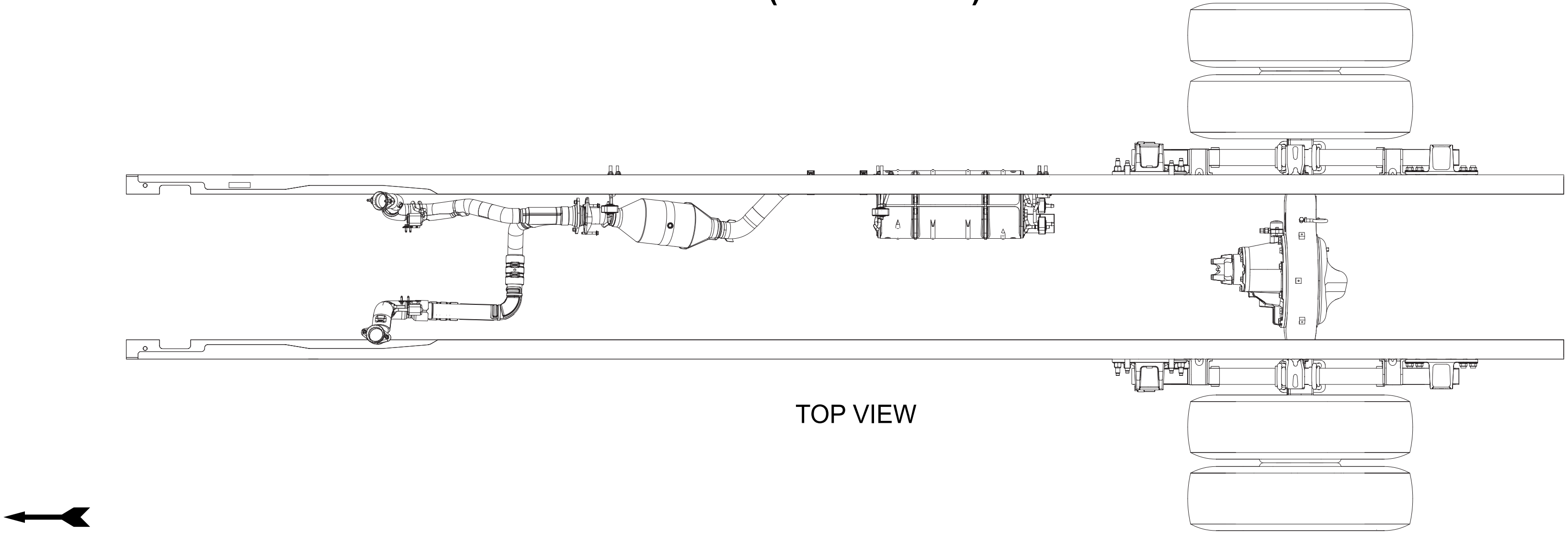
REAR VIEW


68.0
175.9
660.9
190.8
261.4
541.7
249.0
230.3
2996.1
3140.5

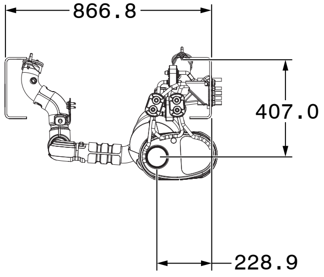
RIGHT SIDE VIEW: INSIDE OF PASSENGER SIDE FRAME RAIL

NOTES — [ ] DIMENSIONS ARE INCHES.

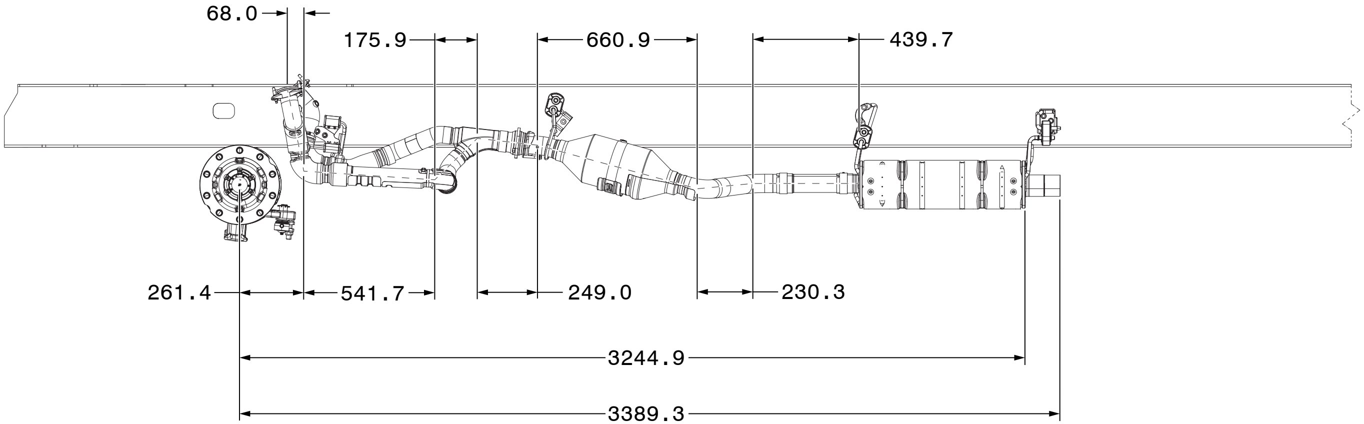
F650/750 SUPER DUTY
GASOLINE EXHAUST SYSTEM
HORIZONTAL INLINE
(SUPER CAB)



TOP VIEW


866.8
407.0
228.9

REAR VIEW

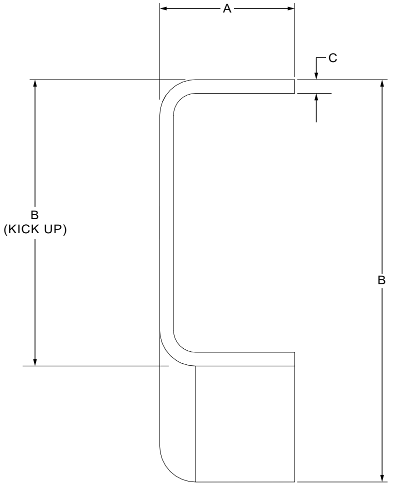

68.0
175.9
660.9
439.7
261.4
541.7
249.0
230.3
3244.9
3389.3

RIGHT SIDE VIEW: INSIDE OF PASSENGER SIDE FRAME RAIL

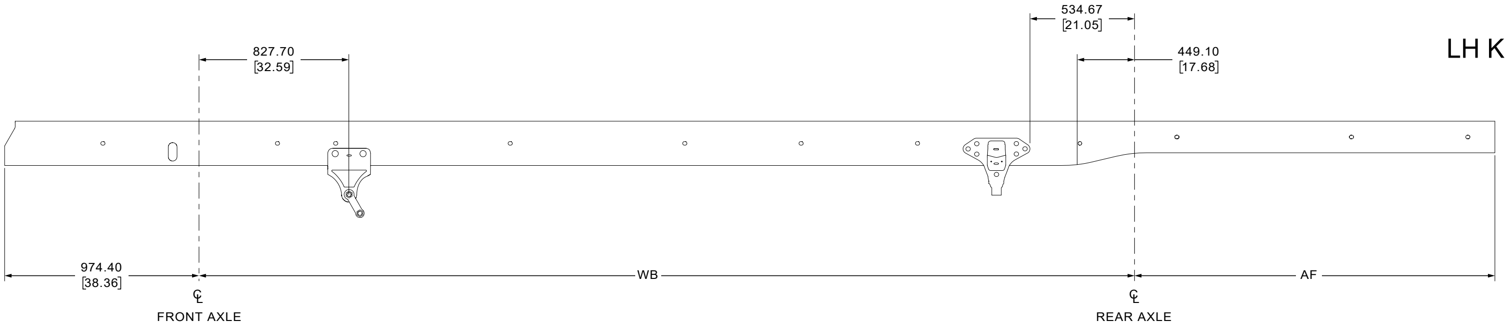
NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
FRAME DATA
FRAME RAIL PROFILES

Order Code	Dimension A mm [in]	Dimension B mm [in]	Dimension C mm [in]	Section Modulus (in^3)	Yield (psi)	Bending Moment (in. -lbs)
533	77.800 (3.063)	231.800 (9.126)	7.925 (0.312)	10.75	80,000	859,200
534	77.800 (3.063)	257.200 (10.126)	7.925 (0.312)	12.64	50,000	632,000
536	90.900 (3.579)	257.200 (10.126)	7.925 (0.312)	14.18	120,000	1,701,600
535	78.500 (3.091)	260.400 (10.252)	9.525 (0.375)	15.14	80,000	1,211,200
539	94.000 (3.701)	263.600 (10.378)	11.125 (0.438)	20.11	120,000	2,413,200
537 (Rear Kick-Up)	77.800 (3.063)	231.800 (9.126) 164.900 (6.492)	7.925 (0.312)	10.75	80,000	860,000
536/412	98.900 (3.894)	276.000 (10.866)	15.850 (0.624)	29.2	120,000	3,504,000
538	91.69 (3.610)	260.35 (10.250)	9.525 (0.375)	16.98	120,000	2,038,000

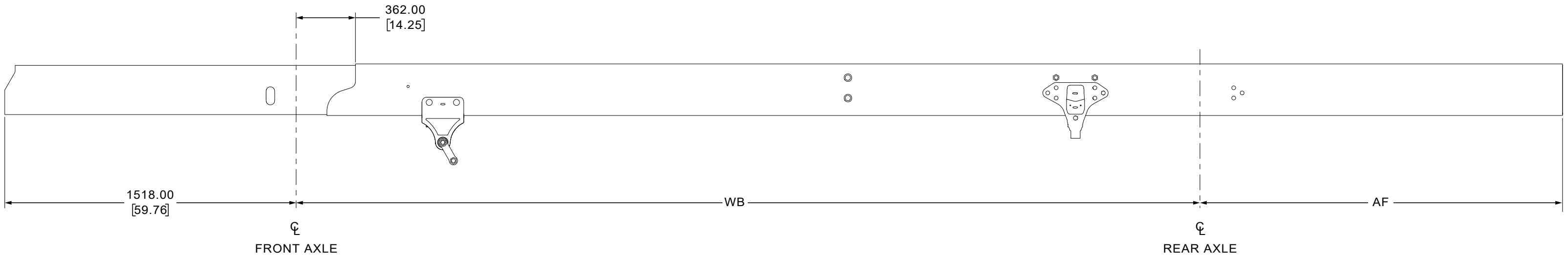

A
C
B
(KICK UP)
B

LH KICK UP FRAME RAIL
REAR VIEW


827.70
[32.59]
534.67
[21.05]
449.10
[17.68]
974.40
[38.36]
WB
AF
℄
FRONT AXLE
℄
REAR AXLE

KICK-UP SECTION FRAME RAIL

FRONT

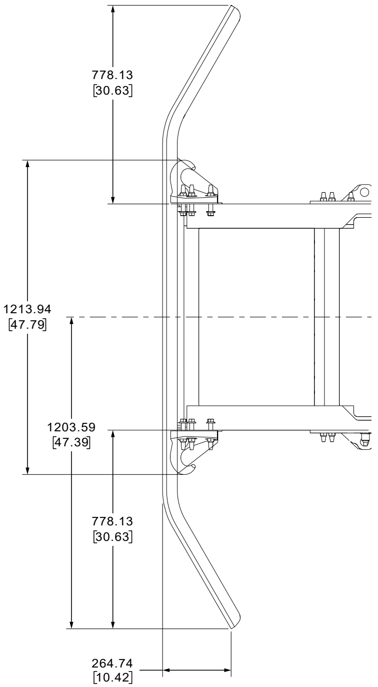

362.00
[14.25]
1518.00
[59.76]
WB
AF
℄
FRONT AXLE
℄
REAR AXLE

REINFORCED SECTION FRAME RAIL WITH INTEGRAL EXTENSION

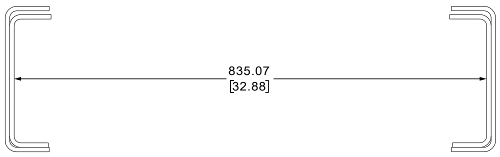
NOTES — [ ] DIMENSIONS ARE INCHES.

Body Builders Layout Book

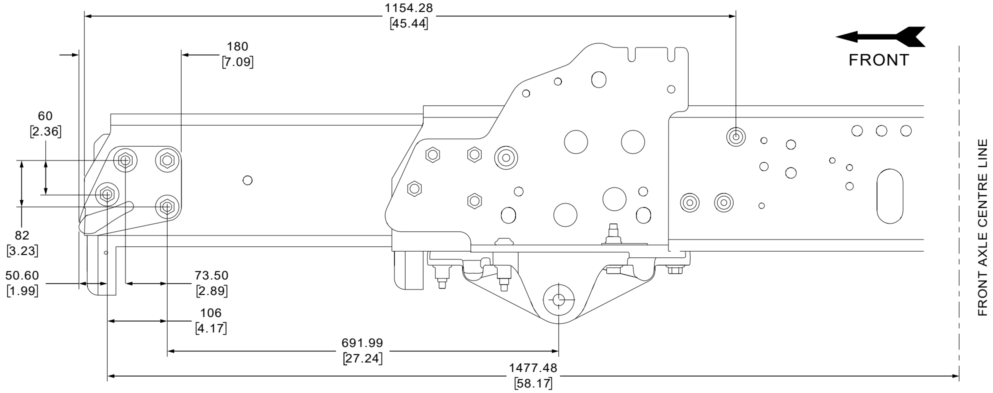
F650/750 SUPER DUTY
FRAME DATA
FRONT FRAME EXTENSION - 20 INCH BOLT ON


778.13
[30.63]
1213.94
[47.79]
1203.59
[47.39]
778.13
[30.63]
264.74
[10.42]

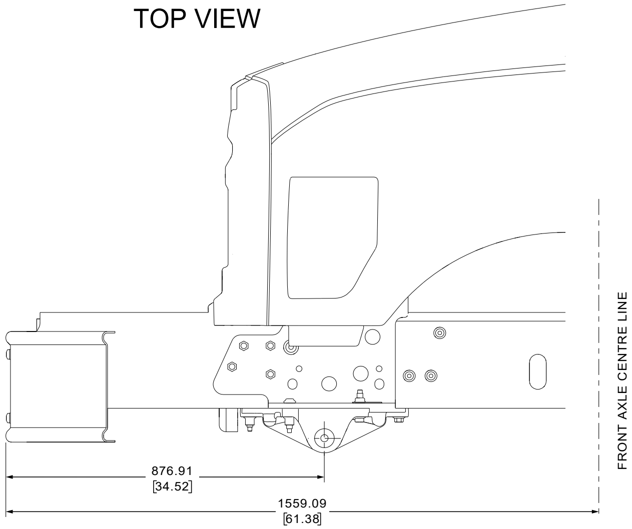
TOP VIEW



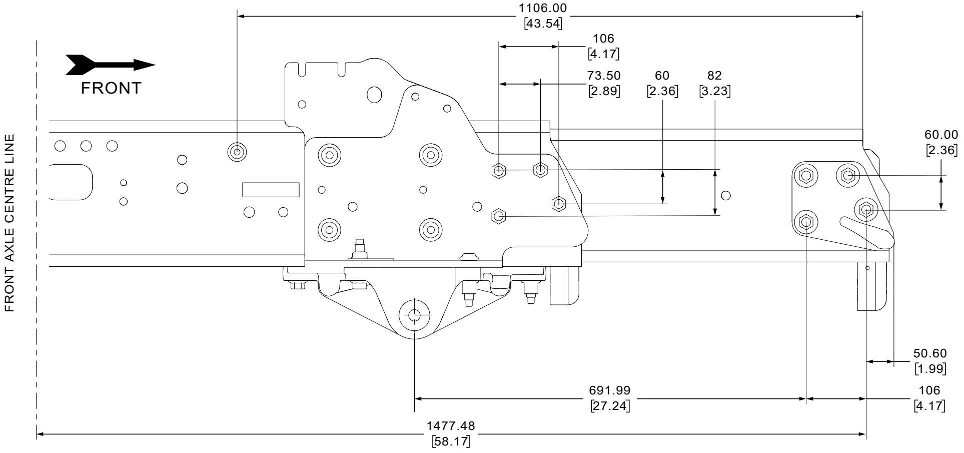
FRONT VIEW


1154.28
[45.44]
180
[7.09]
FRONT
60
[2.36]
82
[3.23]
50.60
[1.99]
73.50
[2.89]
106
[4.17]
691.99
[27.24]
1477.48
[58.17]
FRONT AXLE CENTRE LINE

LEFT SIDE VIEW


876.91
[34.52]
1559.09
[61.38]
FRONT AXLE CENTRE LINE

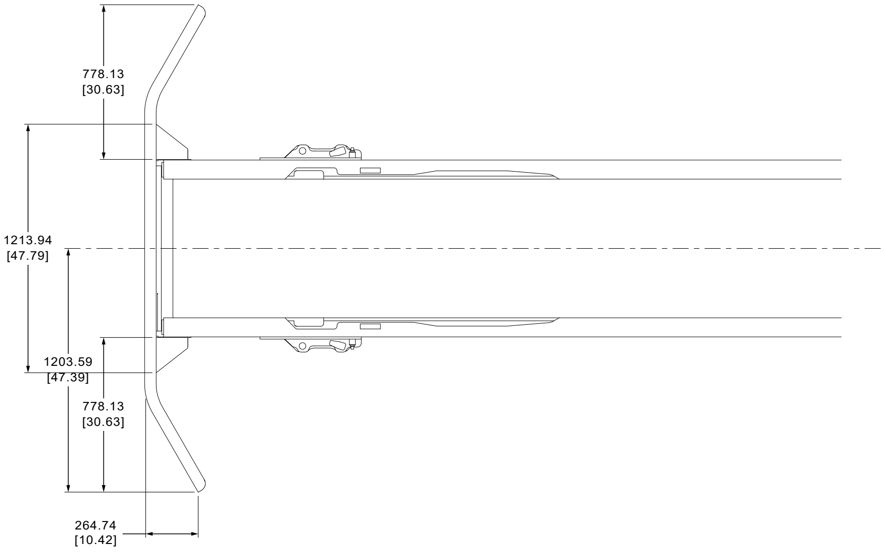
LEFT SIDE VIEW WITH HOOD


1106.00
[43.54]
106
[4.17]
73.50
[2.89]
60
[2.36]
82
[3.23]
FRONT
60.00
[2.36]
FRONT AXLE CENTRE LINE
50.60
[1.99]
691.99
[27.24]
106
[4.17]
1477.48
[58.17]

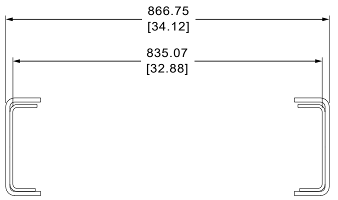
RIGHT SIDE VIEW

NOTES — [ ] DIMENSIONS ARE INCHES.

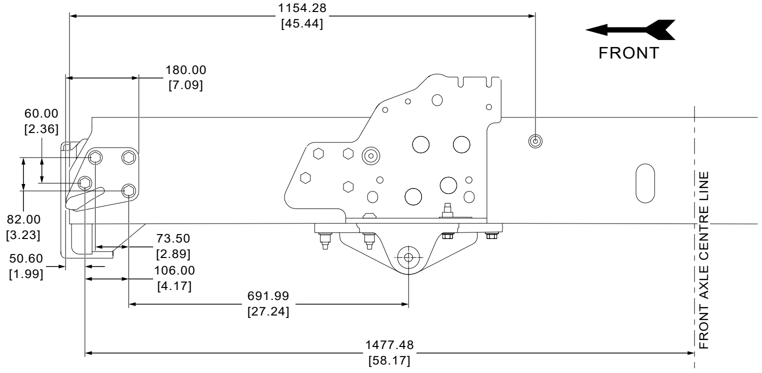
F650/750 SUPER DUTY
FRAME DATA
FRONT FRAME EXTENSION - INTEGRAL 20 INCH FRAME EXTENSION


778.13
[30.63]
1213.94
[47.79]
1203.59
[47.39]
778.13
[30.63]
264.74
[10.42]
FRONT

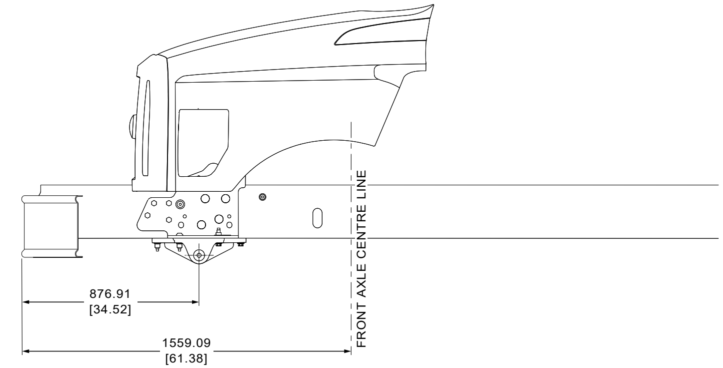
TOP VIEW


866.75
[34.12]
835.07
[32.88]

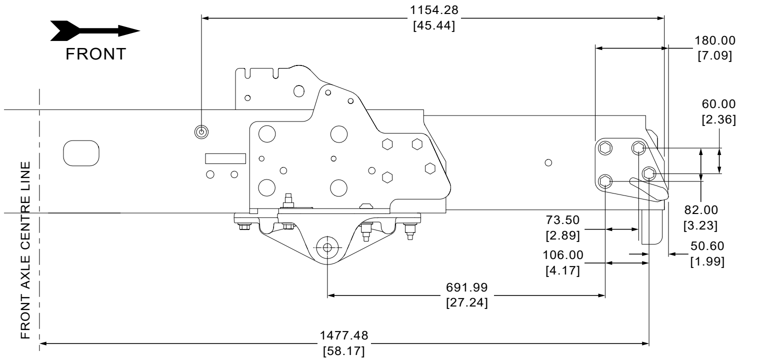
FRONT VIEW


FRONT
1154.28
[45.44]
180.00
[7.09]
60.00
[2.36]
82.00
[3.23]
50.60
[1.99]
73.50
[2.89]
106.00
[4.17]
691.99
[27.24]
1477.48
[58.17]
FRONT AXLE CENTRE LINE

LEFT SIDE VIEW


FRONT AXLE CENTRE LINE
876.91
[34.52]
1559.09
[61.38]
FRONT

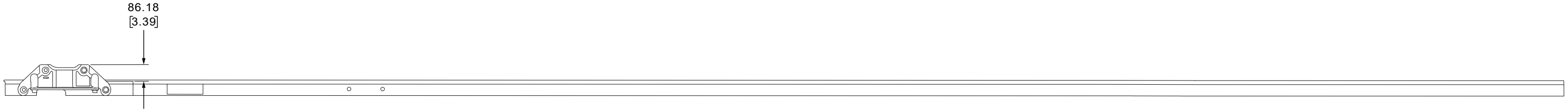
LEFT SIDE VIEW WITH HOOD
(RIGHT SIDE VIEW IS MIRROR IMAGE)


FRONT
1154.28
[45.44]
180.00
[7.09]
60.00
[2.36]
82.00
[3.23]
73.50
[2.89]
50.60
[1.99]
106.00
[4.17]
691.99
[27.24]
1477.48
[58.17]
FRONT AXLE CENTRE LINE

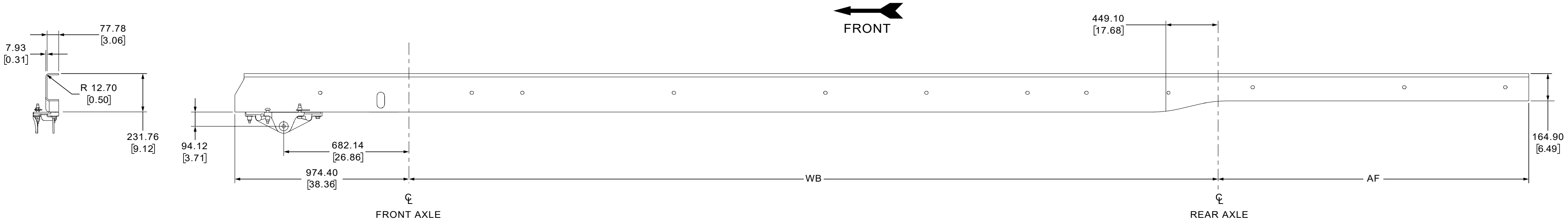
RIGHT SIDE VIEW

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
FRAME DATA
PRO LOADER FRAME



PRO LOADER FRAME



CHASSIS MODIFICATIONS:
Stability Control is specifically calibrated and validated only for your vehicle's original configuration. If you alter your vehicle's chassis components, for example, a wheel base extension or reduction, tag axle addition or removal, a major body change such as conversion of a tractor into a truck. Ford Motor Company is not responsible for the performance of the stability control system if you modify any major components such as axle, suspension or steering system.

PRO LOADER FRAME

REGULAR CAB		SUPER CAB		CREW CAB	
WB mm [in]	AF mm [in]	WB mm [in]	AF mm [in]	WB mm [in]	AF mm [in]
4013.2 (158.0)	1600.2 (63.0)	4546.6 (179.0)	1600.2 (63.0)	4927.6 (194.0)	1600.2 (63.0)
4622.8 (182.0)	1905.0 (75.0)	5156.2 (203.0)	1905.0 (75.0)	5537.2 (218.0)	1905.0 (75.0)
4927.6 (194.0)	1905.0 (75.0)	6070.6 (239.0)	2057.4 (81.0)	6451.6 (254.0)	2438.4 (96.0)
5537.2 (218.0)	2057.4 (81.0)				
6146.8 (242.0)	2540.0 (100.0)				

General Recommendations for Frame and Body Mounting:

Refer to the Design Recommendations section for applicable requirements and important notes Particular attention should include sections relating to:

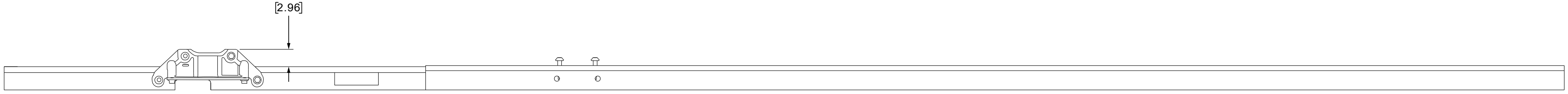
- Suspension and Steering System
  - Important Front End Alignment note for final-stage manufacturer
- Frame
  - Refer to Bulletin Q – 140 for frame modifications recommendation

On vehicles equipped with an Air Suspension System, verify that the settings are correct once the vehicle is completed by the final stage manufacturer. Refer to the applicable Ford workshop service manual for the complete procedure.
NOTE: Since there are different frames and air suspension system offered, verify that the procedure used is correct for the air suspension and frame type being worked on

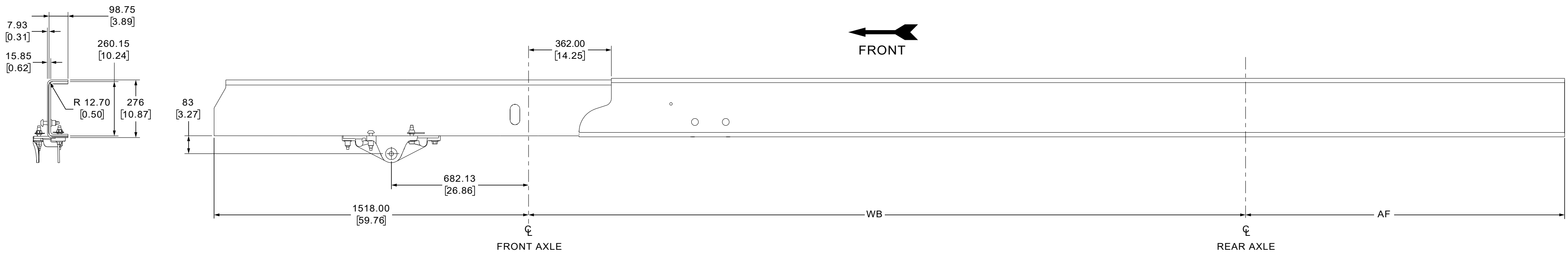
THICKNESS SIDE MEMBER MM [IN]	SECTION MODULUS CUBIC INCH	TYPE FRAME	MAX GVWR LBS
7.925 (0.312)	10.75	9.125	26,000

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
FRAME DATA
FRAME WITH REINFORCEMENT



FRAME WITH REINFORCEMENT AND INTEGRAL FRONT EXTENSION



FRAME WITH REINFORCEMENTS

REGULAR CAB		SUPER CAB		CREW CAB	
WB mm [in]	**AF mm [in]**	**WB mm [in]**	**AF mm [in]**	**WB mm [in]**	**AF mm [in]**
4013.2 (158.0)	1244.6 (49.0)	4546.6 (179.0)	1244.6 (49.0)	4622.8 (182.0)	1244.6 (49.0)
4470.4 (176.0)	1778.0 (70.0)	5003.8 (197.0)	1778.0 (70.0)	4927.6 (194.0)	1244.6 (49.0)
4622.8 (182.0)	1778.0 (70.0)	5156.2 (203.0)	1778.0 (70.0)	5384.8 (212.0)	1778.0 (70.0)
4927.6 (194.0)	1905.0 (75.0)	5461.0 (215.0)	1905.0 (75.0)	5537.2 (218.0)	1778.0 (70.0)
5080.0 (200.0)	1905.0 (75.0)	5613.4 (221.0)	1905.0 (75.0)	5842.0 (230.0)	1905.0 (75.0)
5384.8 (212.0)	2057.4 (81.0)	5918.2 (233.0)	2057.4 (81.0)	5994.4 (236.0)	1905.0 (75.0)
5537.2 (218.0)	2057.4 (81.0)	6070.6 (239.0)	2057.4 (81.0)	6299.2 (248.0)	2057.4 (81.0)
5689.6 (224.0)	2209.8 (87.0)	6223.0 (245.0)	2209.8 (87.0)	6451.6 (254.0)	2057.4 (81.0)
5842.0 (230.0)	2209.8 (87.0)	6375.4 (251.0)	2209.8 (87.0)	6604.0 (260.0)	2209.8 (87.0)
6146.8 (242.0)	2540.0 (100.0)	6680.2 (263.0)	2540.0 (100.0)	6756.4 (266.0)	2209.8 (87.0)
6604.0 (260.0)	3048.0 (120.0)	7137.4 (281.0)	3048.0 (120.0)		
7137.4 (281.0)	3048.0 (120.0)				

CHASSIS MODIFICATIONS:
Stability Control is specifically calibrated and validated only for your vehicle's original configuration. If you alter your vehicle's chassis components, for example, a wheel base extension or reduction, tag axle addition or removal, a major body change such as conversion of a tractor into a truck. Ford Motor Company is not responsible for the performance of the stability control system if you modify any major components such as axle, suspension or steering system.

General Recommendations for Frame and Body Mounting:

Refer to the Design Recommendations section for applicable requirements and important notes
Particular attention should include sections relating to:

- Suspension and Steering System
  Important Front End Alignment note for final-stage manufacturer
- Frame
  Refer to Bulletin Q – 140 for frame modifications recommendation

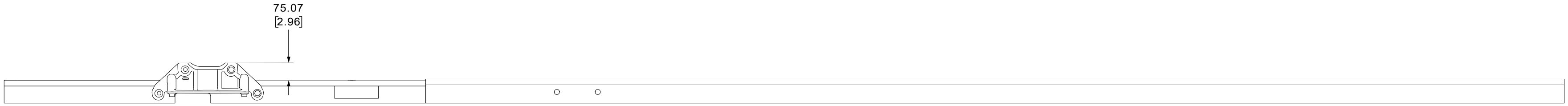
On vehicles equipped with an Air Suspension System, verify that the settings are correct once the vehicle is completed by the final stage manufacturer. Refer to the applicable Ford workshop service manual for the complete procedure.
NOTE: Since there are different frames and air suspension system offered, verify that the procedure used is correct for the air suspension and frame type being worked on

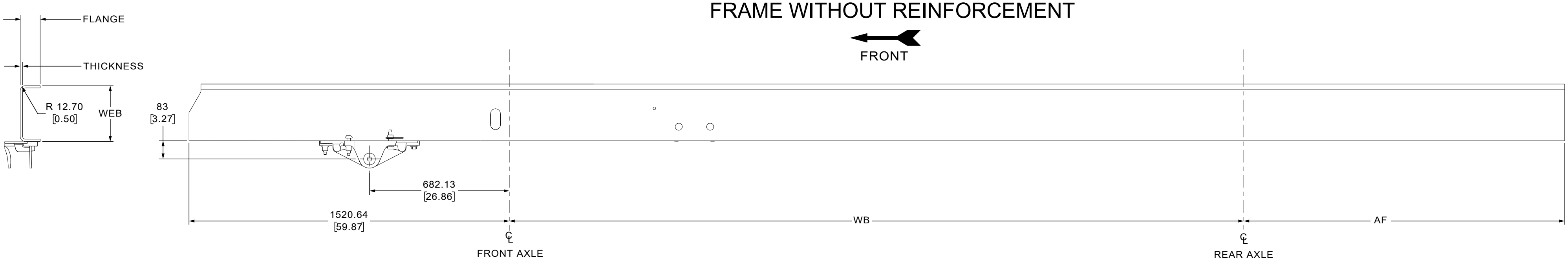
FRAME WITH REINFORCEMENT

THICKNESS REINFORCEMENT MM [IN]	THICKNESS SIDE MEMBER MM [IN]	SECTION MODULUS CUBIC INCH	TYPE FRAME	MAX GVWR LBS
7.925 (0.312)	7.925 (0.312)	29.2	10.866	37,000

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
FRAME DATA
FRAME WITHOUT REINFORCEMENT





FRONT VIEW

FRAME WITHOUT REINFORCEMENTS

REGULAR CAB		SUPER CAB		CREW CAB	
WB mm [in]	AF mm [in]	WB mm [in]	AF mm [in]	WB mm [in]	AF mm [in]
3708.4 (146.0)	990.6 (39.0)	4241.8 (167.0)	990.6 (39.0)	4622.8 (182.0)	990.6 (39.0)
4013.2 (158.0)	990.6 (39.0)	4546.6 (179.0)	990.6 (39.0)	4622.8 (182.0)	1244.6 (49.0)
4013.2 (158.0)	1244.6 (49.0)	4546.6 (179.0)	1244.6 (49.0)	4927.6 (194.0)	1244.6 (49.0)
4470.4 (176.0)	1778.0 (70.0)	5003.8 (197.0)	1778.0 (70.0)	5384.8 (212.0)	1778.0 (70.0)
4622.8 (182.0)	1778.0 (70.0)	5156.2 (203.0)	1778.0 (70.0)	5537.2 (218.0)	1778.0 (70.0)
4927.6 (194.0)	1905.0 (75.0)	5461.0 (215.0)	1905.0 (75.0)	5842.0 (230.0)	1905.0 (75.0)
5080.0 (200.0)	1905.0 (75.0)	5613.4 (221.0)	1905.0 (75.0)	5994.4 (236.0)	1905.0 (75.0)
5384.8 (212.0)	2057.4 (81.0)	5918. (233.0)	2057.4 (81.0)	6299.2 (248.0)	2057.4 (81.0)
5537.2 (218.0)	2057.4 81.0)	6070.6 (239.0)	2057.4 (81.0)	6451.6 (254.0)	2057.4 (81.0)
5689.6 (224.0)	2209.8 (87.0)	6223.0 (245.0)	2209. (87.0)	6604.0 (260.0)	2209.8 (87.0)
5842.0 (230.0)	2209.8 (87.0)	6375.4 (251.0)	2209.8 (87.0)	6756.4 (266.0)	2209.8 (87.0)
6146.8 (242.0)	2540.0 (100.0)	6680.2 (263.0)	2540.0 (100.0)	7061.2 (278.0)	2540.0 (100.0)
6604.0 (260.0)	2362.2 (93.0)	7137.4 (281.0)	3048.0 (120.0)		
6604.0 (260.0)	3048.0 (120.0)				
7137.4 (281.0)	3048.0 (120.0)				

CHASSIS MODIFICATIONS:
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General Recommendations for Frame and Body Mounting:

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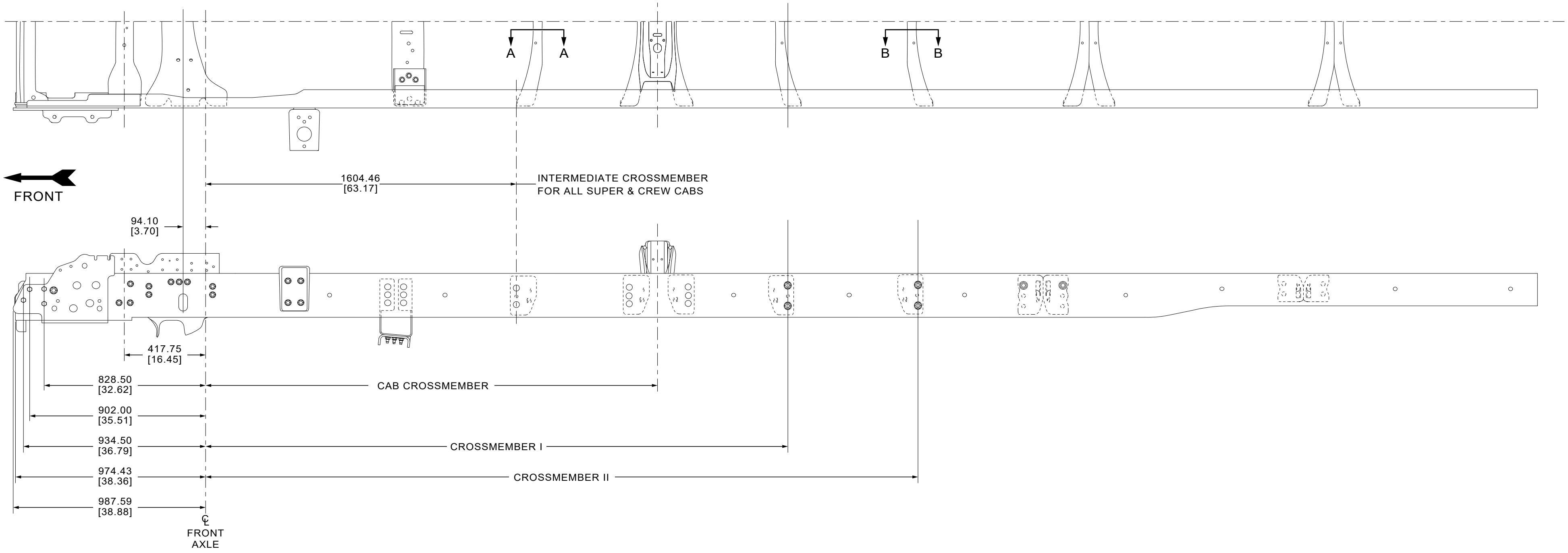
On vehicles equipped with an Air Suspension System, verify that the settings are correct once the vehicle is completed by the final stage manufacturer. Refer to the applicable Ford workshop service manual for the complete procedure.
NOTE: Since there are different frames and air suspension system offered, verify that the procedure used is correct for the air suspension and frame type being worked on

FRAME WITHOUT REINFORCEMENTS

MODEL	THICKNESS SIDE MEMBER MM [IN]	WEB SIDE MEMBER MM [IN]	FLANGE SIDE MEMBER MM [IN]	SECTION MODULUS CUBIC INCH	TYPE FRAME	MAX GVWR LBS	COMMENT
F650 TRACTOR, F750 TRACTOR	7.925 (0.312)	257.200 (10.126)	90.900 (3.579)	14.18	10.125	37,000	
F650, F750	7.925 (0.312)	257.200 (10.126)	90.900 (3.579)	14.18	10.125	37,000	
F650, F750	9.525 (0.375)	260.400 (10.252)	78.500 (3.091)	15.14	10.250	37,000	
F650	7.925 (0.312)	231.800 (9.126)	77.800 (3.063)	10.75	9.125	29,000	
F650	7.925 (0.312)	257.200 (10.126)	77.800 (3.063)	12.64	10.125	29,000	
F750	11.125 (0.438)	263.600 (10.378)	94.000 (3.701)	20.11	10.378	37,000	
F650, F750	9.525 (0.375)	260.35 (10.250)	91.69 (3.610)	16.98	10.250	37,000	F650 281 WB ONLY

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
CROSSMEMBER DATA
PRO LOADER - DIESEL & GASOLINE ENGINE

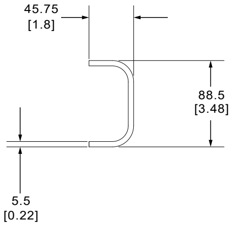

A
A
B
B
FRONT
1604.46
[63.17]
INTERMEDIATE CROSSMEMBER
FOR ALL SUPER & CREW CABS
94.10
[3.70]
417.75
[16.45]
828.50
[32.62]
CAB CROSSMEMBER
902.00
[35.51]
934.50
[36.79]
CROSSMEMBER I
974.43
[38.36]
CROSSMEMBER II
987.59
[38.88]
℄
FRONT
AXLE

CAB CROSSMEMBER	
REGULAR CAB	1759.84 (69.29)
SUPER CAB	2291.2 (90.2)
CREW CAB	2659.62 (104.71)

SUPER CAB	CROSSMEMBER	
WB RANGE	I	II
4646.6	3003.0 (118.2)	-
5156.2	3003.0 (118.2)	4123.0 (162.3)
6070.6	3003.0 (118.2)	4571.0 (180.0)

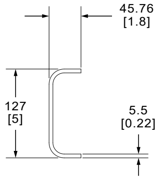
REGULAR CAB	CROSSMEMBER	
WB RANGE	I	II
4013.2	2582.0 (101.7)	-
4622.8	2779.0 (109.4)	-
4927.6	3003.0 (118.2)	-
5537.2	2810.9 (110.7)	4123.0 (162.3)
6146.8	3003.0 (118.2)	4571.0 (180.0)

CREW CAB	CROSSMEMBER	
WB RANGE	I	II
4927.6	3451.0 (135.9)	-
5537.2	3899.0 (153.5)	-
6451.6	3451.0 (135.9)	4571.0 (180.0)


45.75
[1.8]
88.5
[3.48]
5.5
[0.22]

℄ SECTION OF
INTEREMEDIATE CROSSMEMBER
FOR ALL SUPER & CREW CABS

SECTION A - A

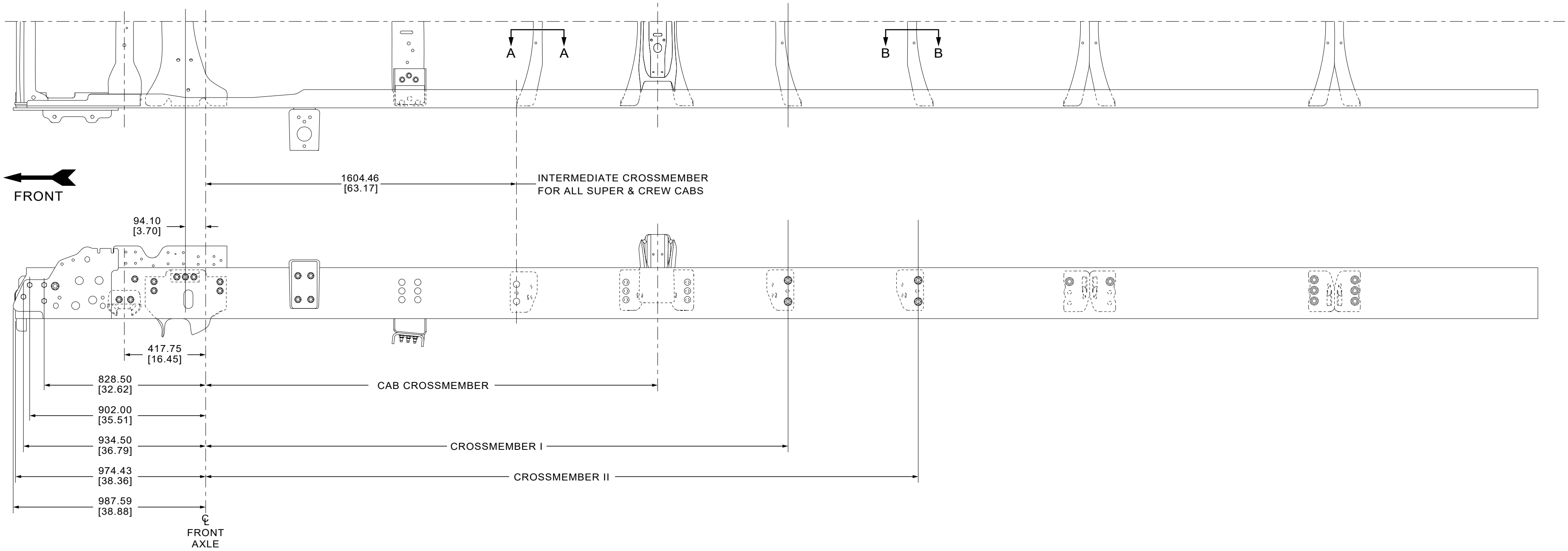

45.76
[1.8]
127
[5]
5.5
[0.22]

℄ SECTION OF
CROSSMEMBER I, II

SECTION B - B

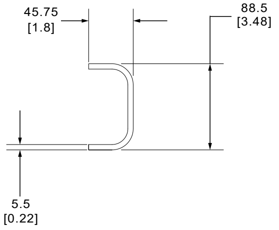
NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
CROSSMEMBER DATA
DOCK HEIGHT - DIESEL / GASOLINE ENGINE


A
A
B
B
FRONT
1604.46
[63.17]
INTERMEDIATE CROSSMEMBER
FOR ALL SUPER & CREW CABS
94.10
[3.70]
417.75
[16.45]
828.50
[32.62]
CAB CROSSMEMBER
902.00
[35.51]
934.50
[36.79]
CROSSMEMBER I
974.43
[38.36]
CROSSMEMBER II
987.59
[38.88]
℄
FRONT
AXLE

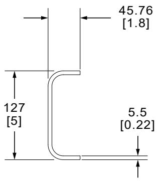
CAB CROSSMEMBER	
REGULAR CAB	1759.84 (69.29)
SUPER CAB	2291.2 (90.2)
CREW CAB	2659.62 (104.71)

SUPER CAB	CROSSMEMBER		
WB RANGE	I	II	III
4241.8	-	-	-
4546.6	3003.0 (118.2)	-	-
5003.8	3003.0 (118.2)	3675.0 (144.7)	-
5156.2	3003.0 (118.2)	3675.0 (144.7)	-
5461.0	3003.0 (118.2)	4123.0 (162.3)	-
5613.4	3003.0 (118.2)	4123.0 (162.3)	-
5918.2	3003.0 (118.2)	4123.0 (162.3)	-
6070.6	3003.0 (118.2)	4171.0 (164.2)	-
6223.0	3003.0 (118.2)	4571.0 (180.0)	-
6375.4	3003.0 (118.2)	4571.0 (180.0)	-
6680.2	3003.0 (118.2)	3899.0 (153.5)	5019.0 (197.6)
7137.4	3003.0 (118.2)	4123.0 (162.3)	5691.0 (224.1)


45.75
[1.8]
88.5
[3.48]
5.5
[0.22]

℄ SECTION OF
INTEREMEDIATE CROSSMEMBER
FOR ALL SUPER & CREW CABS

SECTION A - A


45.76
[1.8]
127
[5]
5.5
[0.22]

℄ SECTION OF
CROSSMEMBER I, II

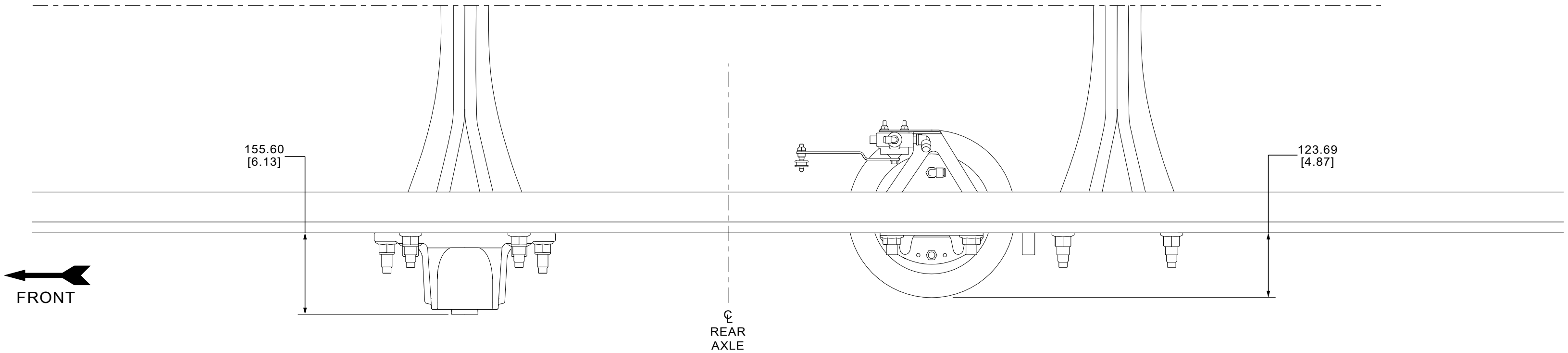
SECTION B - B

REGULAR CAB	CROSSMEMBER		
WB RANGE	I	II	III
3708.4	2331.0 (91.8)	-	-
4013.2	2582.0 (101.7)	-	-
4470.4	2779.0 (109.4)	-	-
4622.8	2779.0 (109.4)	-	-
4927.6	3003.0 (118.2)	-	-
5080.0	2810.9 (110.7)	3675.0 (144.7)	-
5384.8	2810.9 (110.7)	3675.0 (144.7)	-
5537.2	2810.9 (110.7)	4123.0 (162.3)	-
5689.6	2810.9 (110.7)	4123.0 (162.3)	-
5842.0	2810.9 (110.7)	4123.0 (162.3)	-
6146.8	3003.0 (118.2)	4571.0 (180.0)	-
6604.0	2810.9 (110.7)	3899.0 (153.5)	5019.0 (197.6)
7137.4	2810.9 (110.7)	4123.0 (162.3)	5423.0 (213.5)

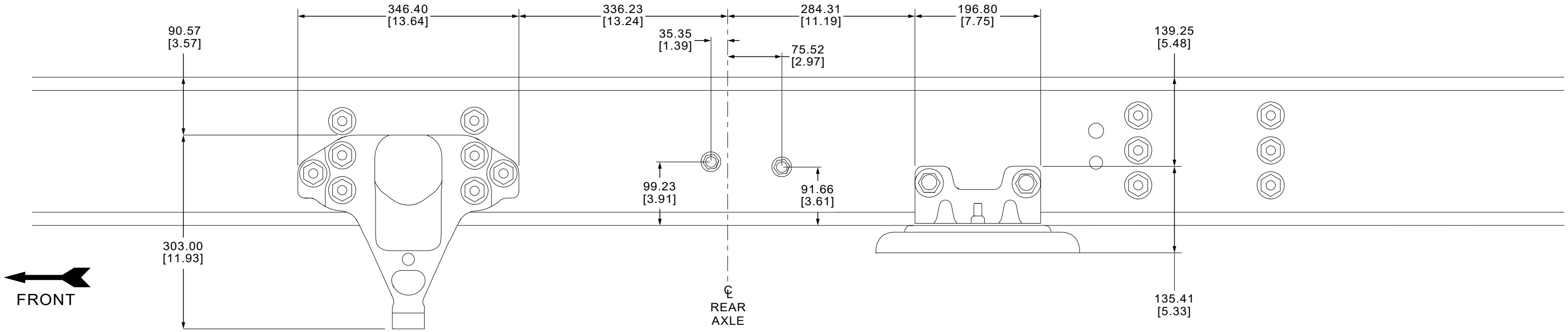
CREW CAB	CROSSMEMBER		
WB RANGE	I	II	III
4622.8	-	-	-
4927.6	3451.0 (135.9)	-	-
5384.8	3675.0 (144.7)	-	-
5537.2	3899.0 (153.5)	-	-
5842.0	4347.0 (171.1)	-	-
5994.4	4347.0 (171.1)	-	-
6299.2	3451.0 (135.9)	4571.0 (180.0)	-
6451.6	3451.0 (135.9)	4571.0 (180.0)	-
6604.0	3899.0 (153.5)	5019.0 (197.6)	-
6756.4	3899.0 (153.5)	5019.0 (197.6)	-
7061.2	4123.0 (162.3)	5243.0 (206.4)	-

NOTES — [ ] DIMENSIONS ARE INCHES.

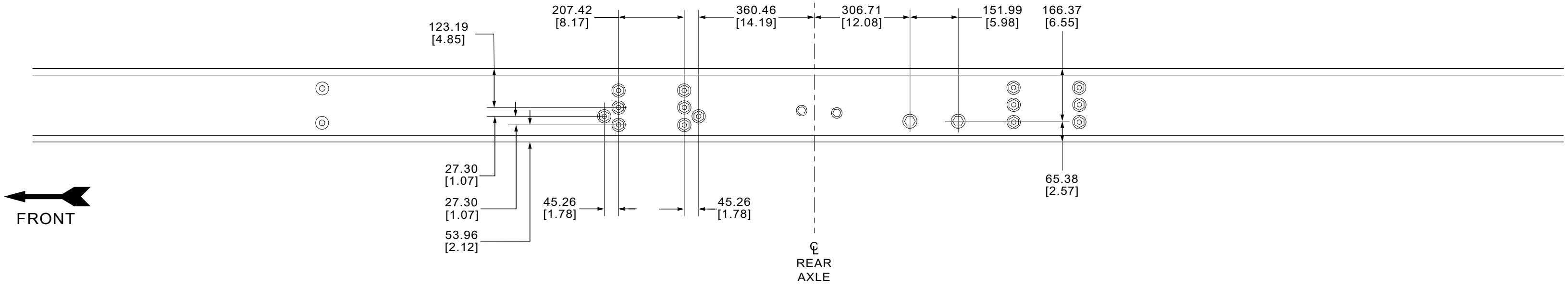
F650/750 SUPER DUTY
HENDRICKSON AIR SUSPENSION
8.5” FRAME RAIL


155.60
[6.13]
123.69
[4.87]
FRONT
℄
REAR
AXLE

TOP VIEW


346.40
[13.64]
336.23
[13.24]
284.31
[11.19]
196.80
[7.75]
90.57
[3.57]
35.35
[1.39]
75.52
[2.97]
139.25
[5.48]
99.23
[3.91]
91.66
[3.61]
303.00
[11.93]
FRONT
℄
REAR
AXLE
135.41
[5.33]

SIDE VIEW - OUTSIDE LEFT FRAME RAIL

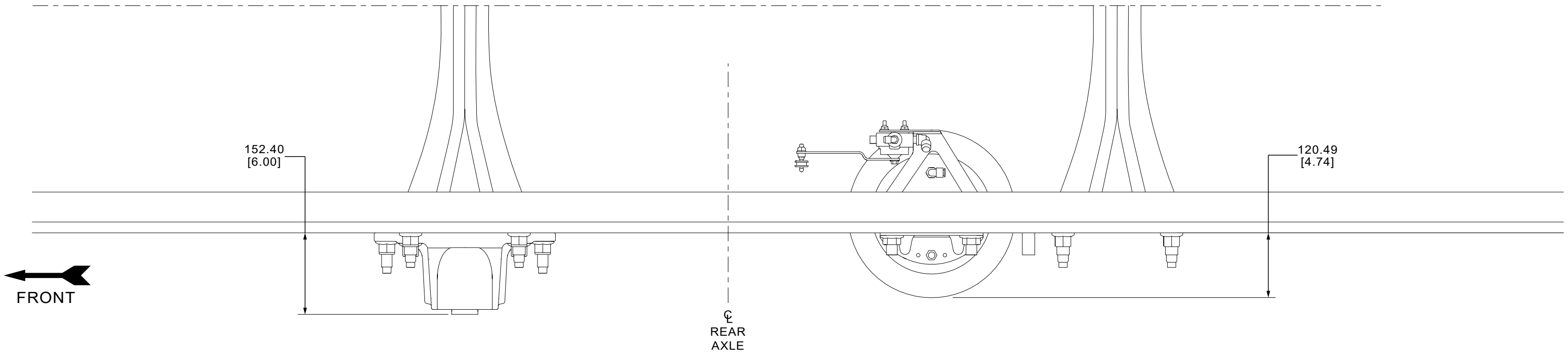

123.19
[4.85]
207.42
[8.17]
360.46
[14.19]
306.71
[12.08]
151.99
[5.98]
166.37
[6.55]
27.30
[1.07]
27.30
[1.07]
53.96
[2.12]
45.26
[1.78]
45.26
[1.78]
65.38
[2.57]
FRONT
℄
REAR
AXLE

SIDE VIEW - FRAME PIERCINGS

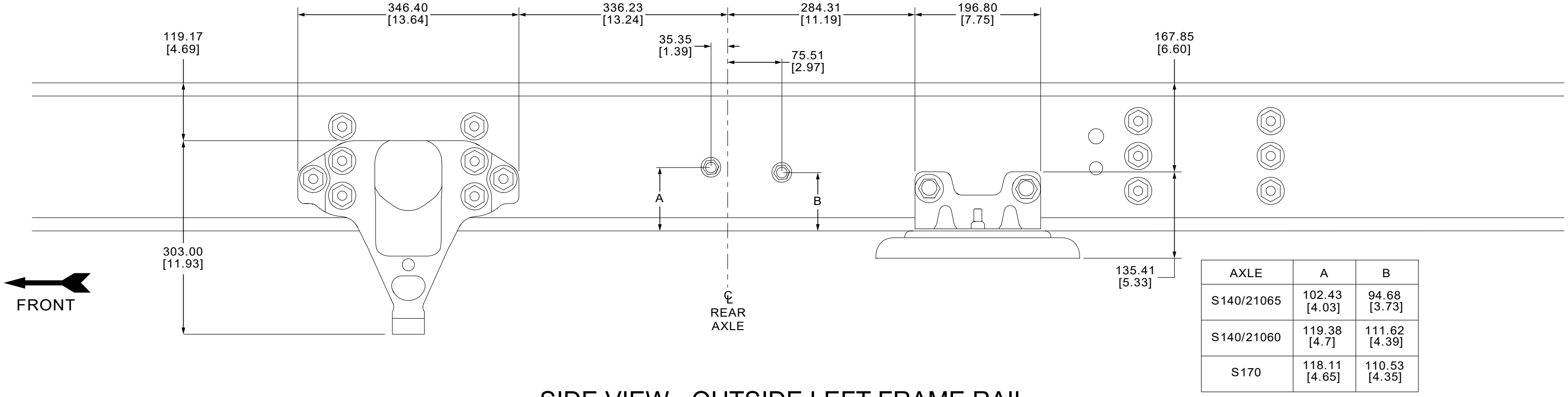
NEW HARDWARE MUST BE USED WHEN REBUILDING SUSPENSION COMPONENTS TO FRAME.

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
HENDRICKSON AIR SUSPENSION
9.5” FRAME RAIL

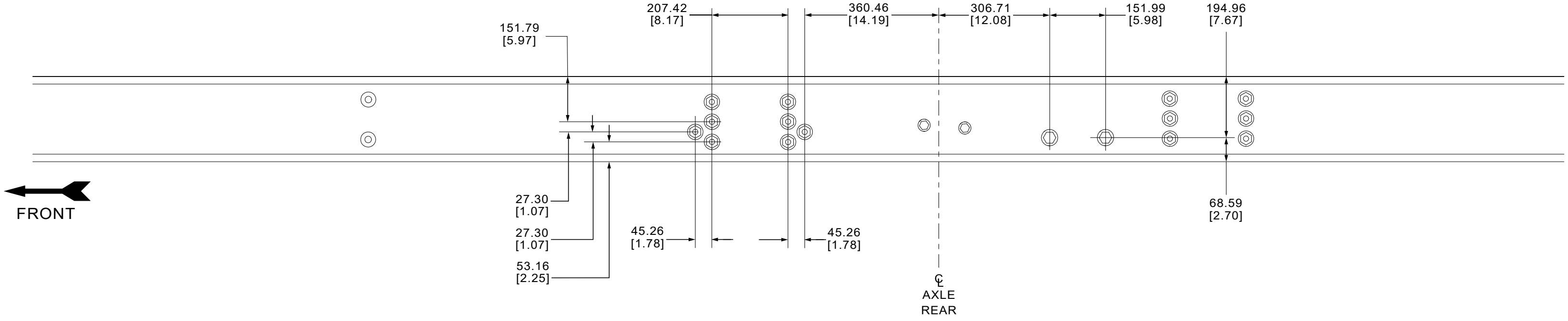

152.40
[6.00]
120.49
[4.74]
FRONT
℄
REAR
AXLE

TOP VIEW


346.40
[13.64]
336.23
[13.24]
284.31
[11.19]
196.80
[7.75]
119.17
[4.69]
35.35
[1.39]
75.51
[2.97]
167.85
[6.60]
A
B
303.00
[11.93]
135.41
[5.33]
FRONT
℄
REAR
AXLE

AXLE	A	B
S140/21065	102.43 [4.03]	94.68 [3.73]
S140/21060	119.38 [4.7]	111.62 [4.39]
S170	118.11 [4.65]	110.53 [4.35]

SIDE VIEW - OUTSIDE LEFT FRAME RAIL

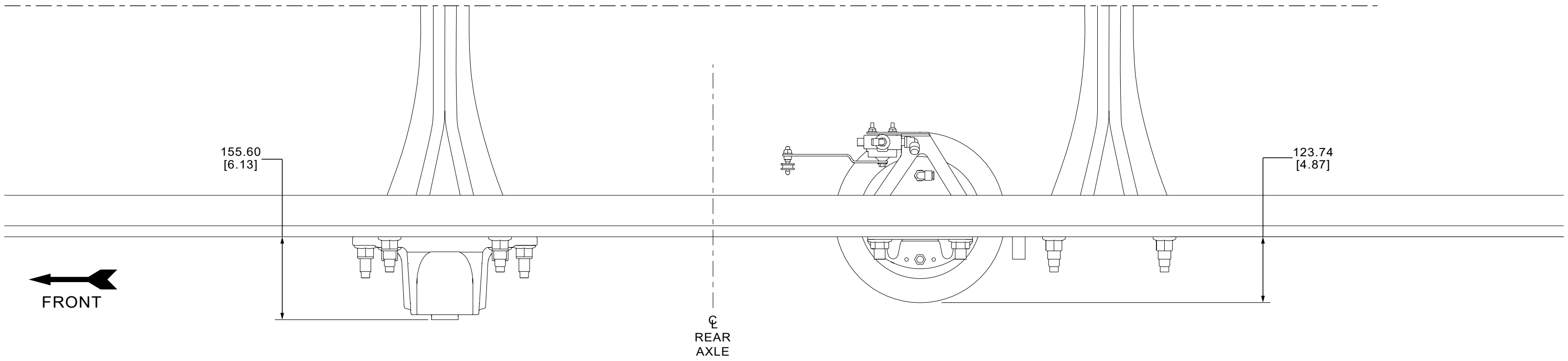

151.79
[5.97]
207.42
[8.17]
360.46
[14.19]
306.71
[12.08]
151.99
[5.98]
194.96
[7.67]
FRONT
27.30
[1.07]
27.30
[1.07]
53.16
[2.25]
45.26
[1.78]
45.26
[1.78]
℄
AXLE
REAR
68.59
[2.70]

SIDE VIEW - FRAME PIERCINGS

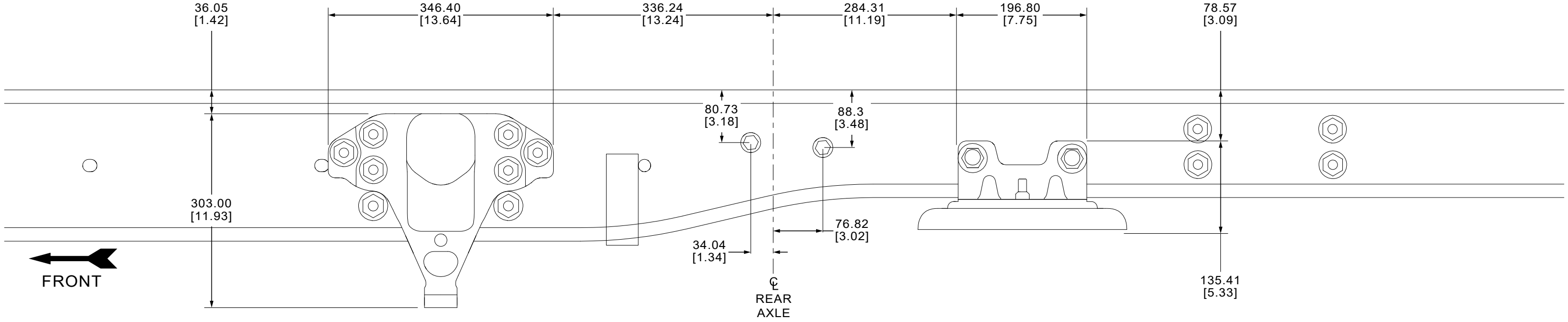
NEW HARDWARE MUST BE USED WHEN REBUILDING SUSPENSION COMPONENTS TO FRAME.

NOTES — [ ] DIMENSIONS ARE INCHES.

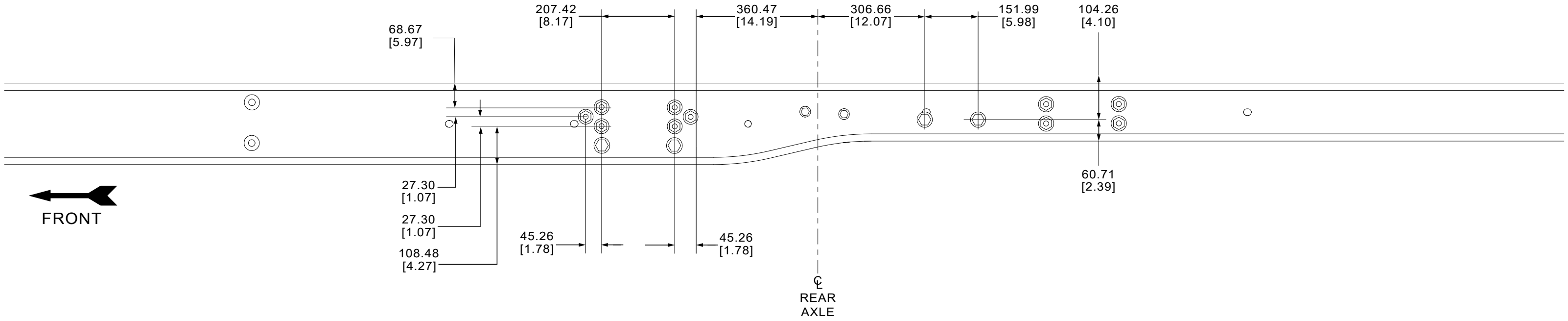
F650/750 SUPER DUTY
HENDRICKSON AIR SUSPENSION
KUP FRAME RAIL


155.60
[6.13]
123.74
[4.87]
FRONT
℄
REAR
AXLE

TOP VIEW


36.05
[1.42]
346.40
[13.64]
336.24
[13.24]
284.31
[11.19]
196.80
[7.75]
78.57
[3.09]
80.73
[3.18]
88.3
[3.48]
303.00
[11.93]
76.82
[3.02]
34.04
[1.34]
135.41
[5.33]
FRONT
℄
REAR
AXLE

SIDE VIEW - OUTSIDE LEFT FRAME RAIL

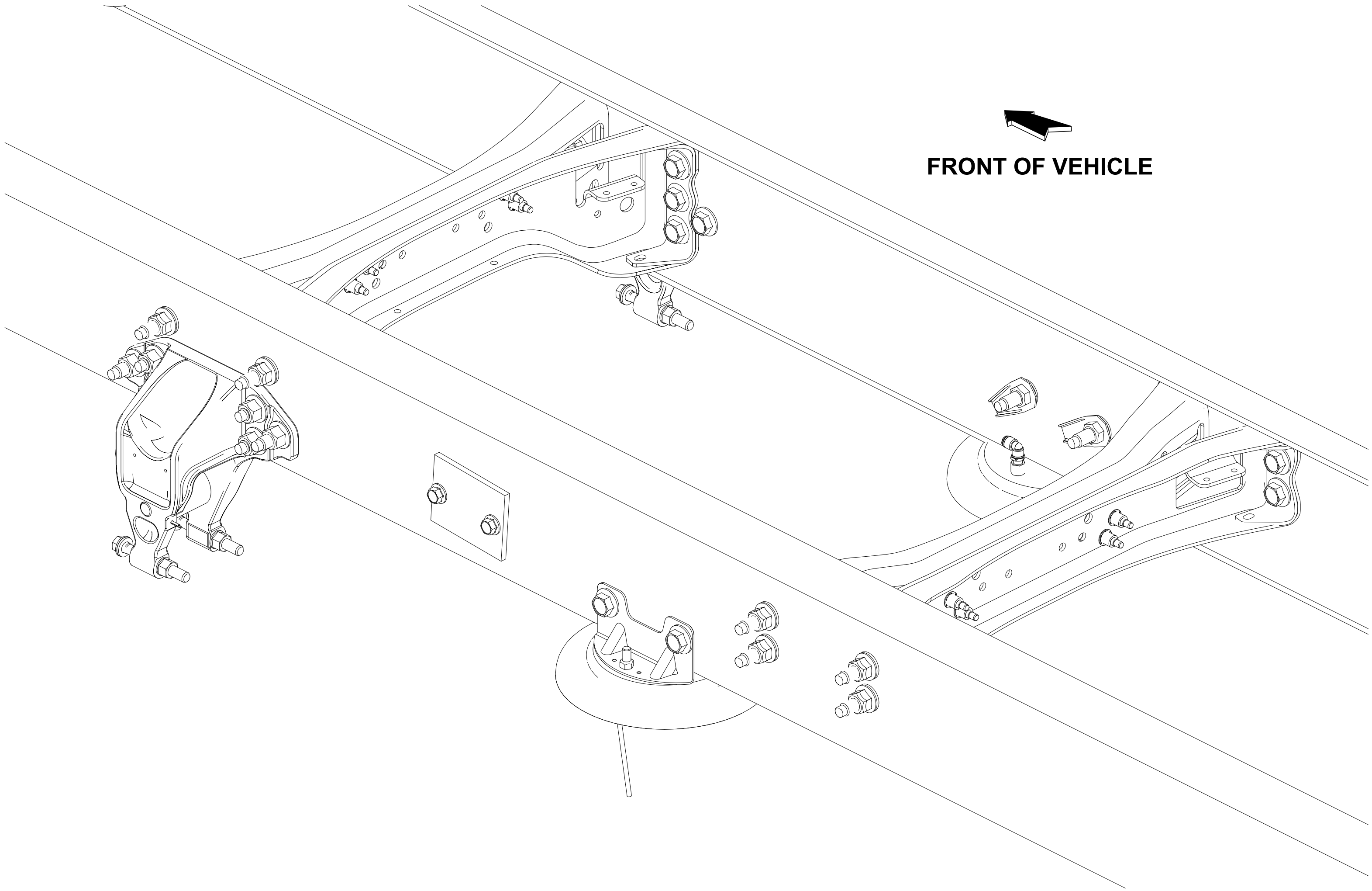

68.67
[5.97]
207.42
[8.17]
360.47
[14.19]
306.66
[12.07]
151.99
[5.98]
104.26
[4.10]
60.71
[2.39]
27.30
[1.07]
27.30
[1.07]
108.48
[4.27]
45.26
[1.78]
45.26
[1.78]
FRONT
℄
REAR
AXLE

SIDE VIEW - FRAME PIERCINGS

NEW HARDWARE MUST BE USED WHEN REBUILDING SUSPENSION COMPONENTS TO FRAME.

NOTES — [ ] DIMENSIONS ARE INCHES.

F750 SUPER DUTY
HENDRICKSON AIR SUSPENSION
9.5" FRAME RAIL
DOWNGRADE PACKAGE 2



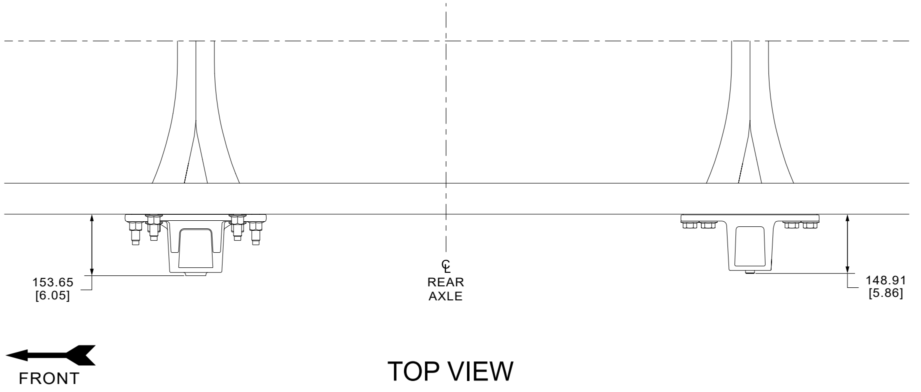
REAR DOUBLE DOGBONE POSITIONS OF REAR SUSPENSION

NEW HARDWARE MUST BE USED WHEN REBUILDING SUSPENSION COMPONENTS TO FRAME.

NOTES — [ ] DIMENSIONS ARE INCHES.

Body Builders Layout Book

F650/750 SUPER DUTY
SPRING SUSPENSION
KICK-UP FRAME


153.65
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REAR
AXLE
148.91
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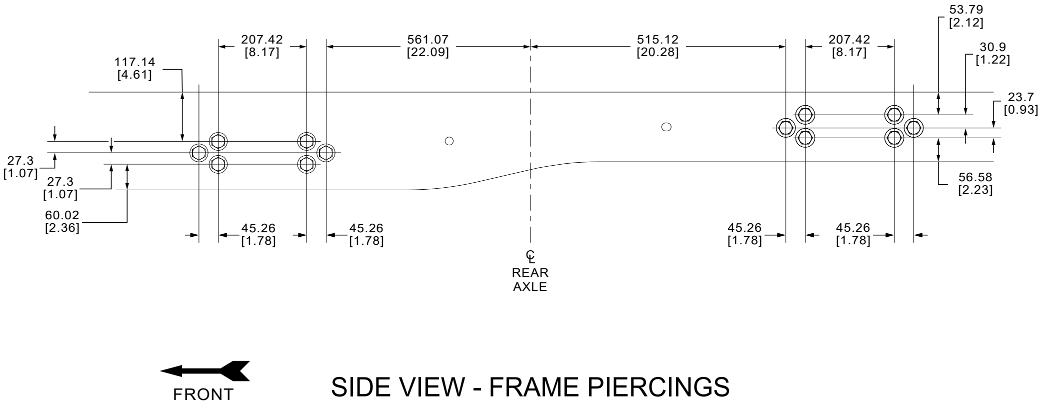
FRONT

TOP VIEW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REAR
AXLE
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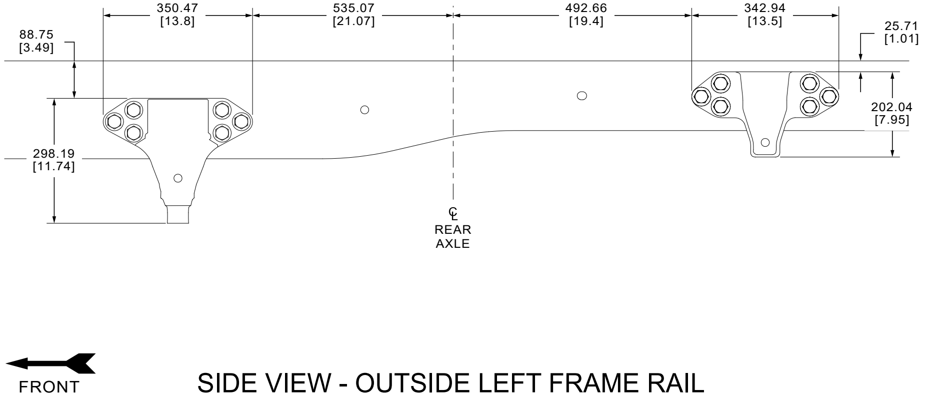
SIDE VIEW - FRAME PIERCINGS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[11.74]
℄
REAR
AXLE
FRONT

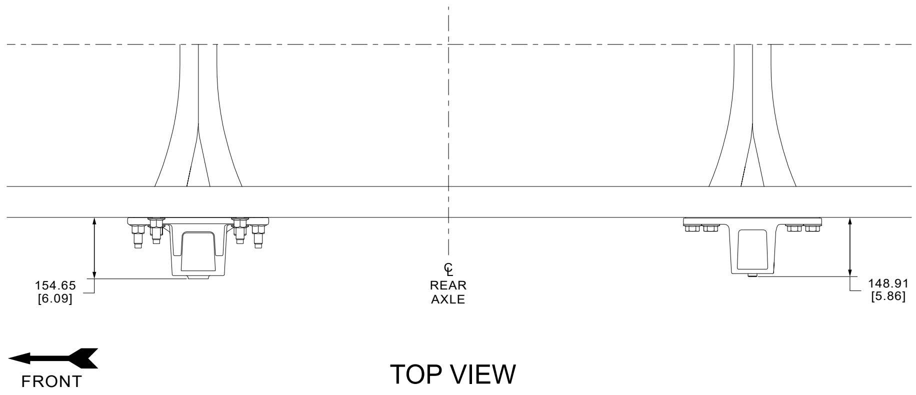
SIDE VIEW - OUTSIDE LEFT FRAME RAIL

NEW HARDWARE MUST BE USED WHEN REBUILDING SUSPENSION COMPONENTS TO FRAME.

NOTES — [ ] DIMENSIONS ARE INCHES.

Body Builders Layout Book

F650/750 SUPER DUTY
SPRING SUSPENSION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REAR
AXLE
148.91
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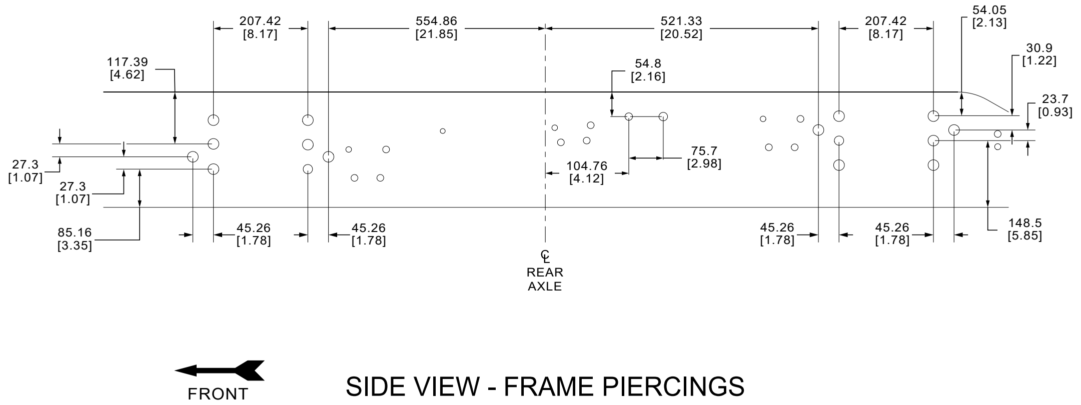
FRONT

TOP VIEW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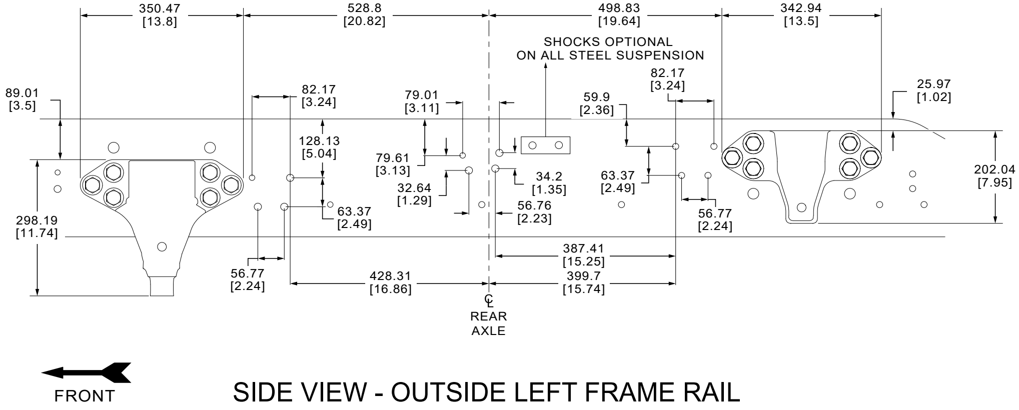
[5.85]
℄
REAR
AXLE
FRONT

SIDE VIEW - FRAME PIERCINGS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ON ALL STEEL SUSPENSION
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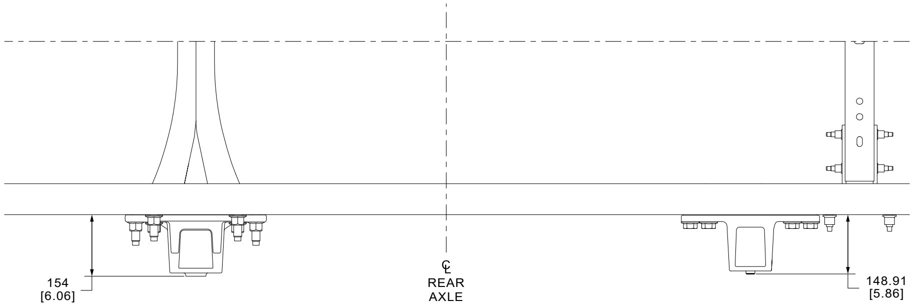
℄
REAR
AXLE
FRONT

SIDE VIEW - OUTSIDE LEFT FRAME RAIL

NEW HARDWARE MUST BE USED WHEN REBUILDING SUSPENSION COMPONENTS TO FRAME.

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
SPRING SUSPENSION
LIMITED SERIES FRAME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AXLE
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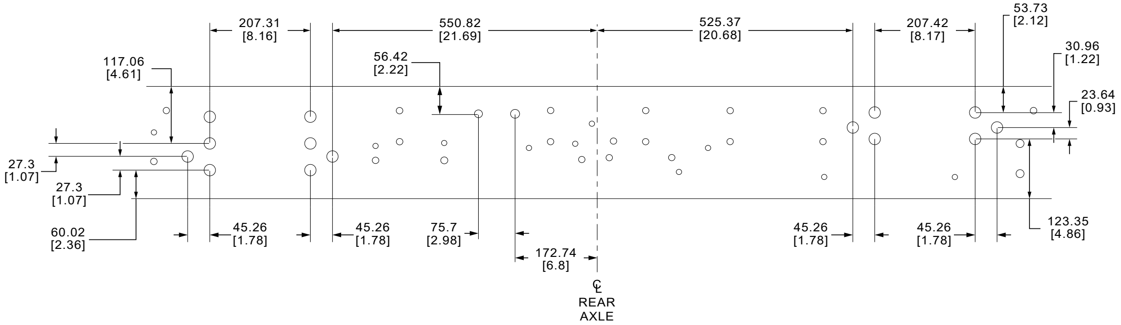
[5.86]

FRONT

TOP VIEW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27.3
[1.07]
60.02
[2.36]
45.26
[1.78]
45.26
[1.78]
75.7
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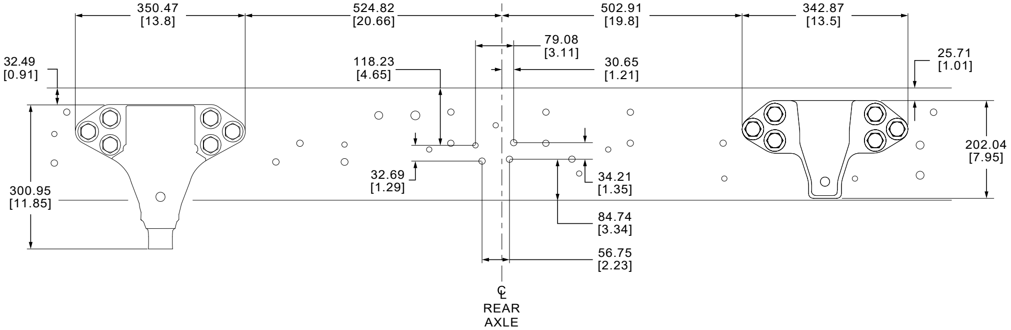
172.74
[6.8]
45.26
[1.78]
45.26
[1.78]
123.35
[4.86]
℄
REAR
AXLE

FRONT

SIDE VIEW - FRAME PIERCINGS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[1.29]
34.21
[1.35]
300.95
[11.85]
84.74
[3.34]
56.75
[2.23]
℄
REAR
AXLE

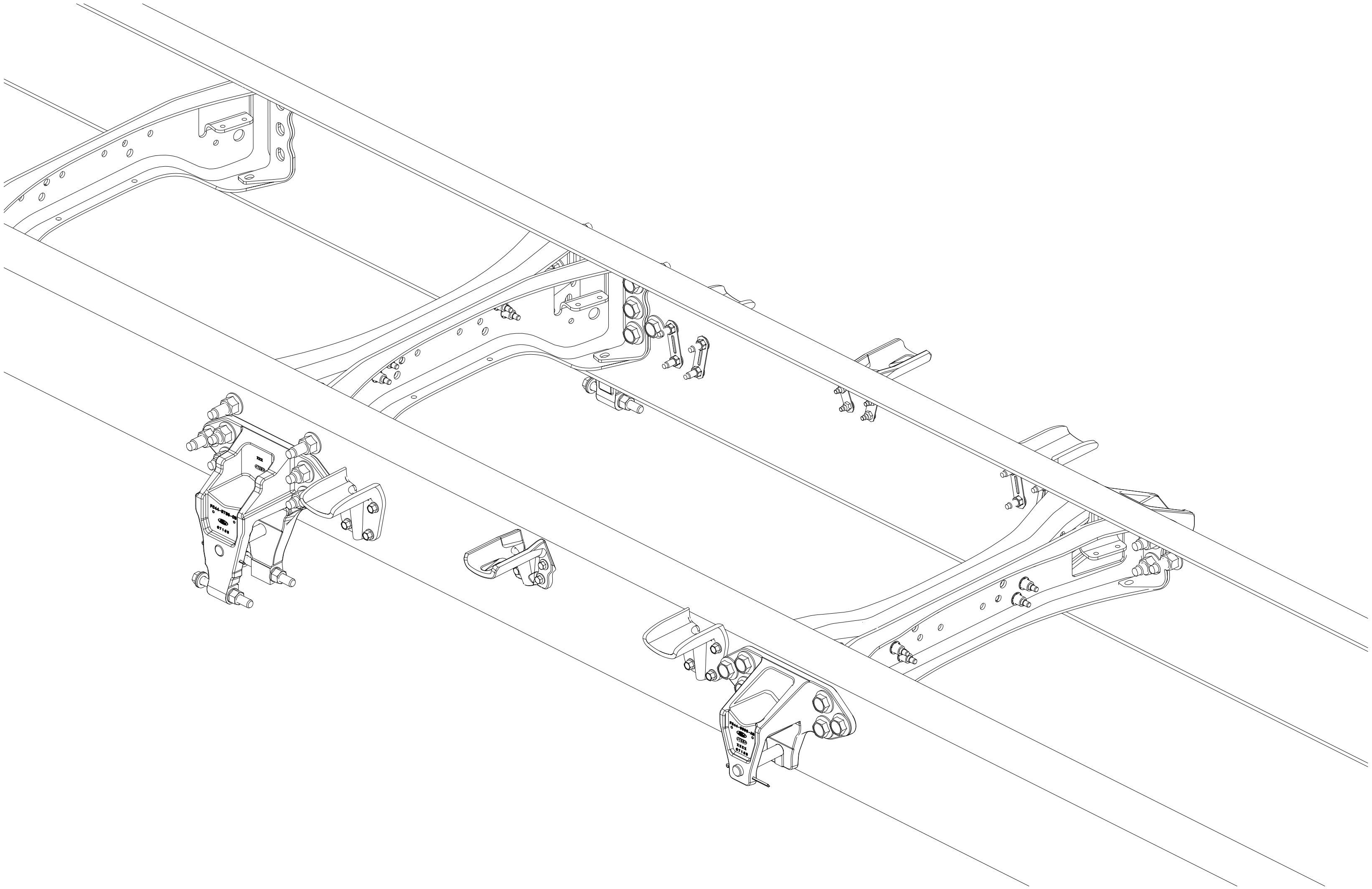
FRONT

SIDE VIEW - OUTSIDE LEFT FRAME RAIL

NEW HARDWARE MUST BE USED WHEN REBUILDING SUSPENSION COMPONENTS TO FRAME.

NOTES — [ ] DIMENSIONS ARE INCHES.

F750 SUPER DUTY
SPRING SUSPENSION
DOWNGRADE PACKAGE 2



REAR DOUBLE DOGBONE POSITIONS

NEW HARDWARE MUST BE USED WHEN REBUILDING SUSPENSION COMPONENTS TO FRAME.

NOTES — [ ] DIMENSIONS ARE INCHES.

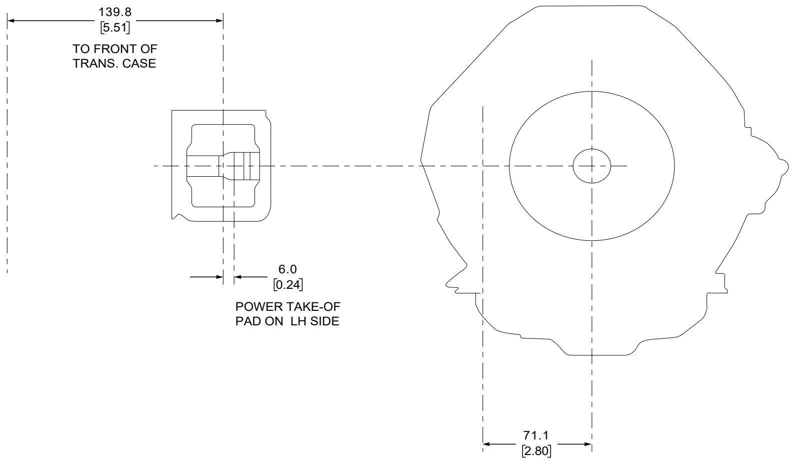
F650/750 SUPER DUTY
SEIC /PTO
TRANSMISSION SPECIFICATION

SUBJECT	ITEM	TORQSHIFT 6-SPEED AUTOMATIC 6.7L Diesel	TORQSHIFT 6-SPEED AUTOMATIC 7.3L Gas
Transmission Fluid Type (1)		Mercon LV ATF	Mercon LV ATF
Hydraulic Fluid Line Pressure (1)	At base engine speed (Park)	120 or 90 ps i @ 600 rpm	120 or 90 ps i @ 725 rpm
	At base engine speed (Neutral)	90 ps i @ 600 rpm	90 ps i @ 725 rpm
	At base engine speed (Drive)	65 ps i @ 600 rpm	65 ps i @ 600 rpm
	PTO Enabled (Park)	150 psi	150 psi
	PTO Enabled (Neutral)	150 psi	150 psi
	PTO Enabled (Drive)	150 psi	150 psi
Transmission Gear Ratios	1st	3.974	3.974
	2nd	2.318	2.318
	3rd	1.516	1.516
	4th	1.149	1.149
	5th	0.858	0.858
	6th	0.674	0.674
	Reverse	3.128	3.128
	Torque Converter Multiplication	1.85	2.00
PTO Drive Gear Function	All Forward Drive Gears	Mobile Mode	Mobile Mode
	Reverse	Mobile Mode	Mobile Mode
	Overdrive	Mobile Mode	Mobile Mode
	Park	Stationary Mode\Mobile Mode	Stationary Mode - Mobile Mode
	Neutral	Stationary Mode\Mobile Mode	Stationary Mode - Mobile Mode
PTO Drive Gear Data	PTO Port	LH (Driver Side) only SAE 6-Bolt pattern	LH (Driver Side) only SAE 6-Bolt pattern
	Gear Torque Rating	300 lb-ft Stationary, 200 lb-ft Mobile	250 lb-ft Stationary,125 lb-ft Mobile
	Gear Ratio	1	1
	Number of gear teeth	52	52
	Pitch Diameter	108.472 mm	108.472 mm
	Normal Pressure Angle	19.339 Degrees	19.339 Degrees
	Angle and Hand of Helix	RH-Spur Gear	RH-Spur Gear
	Gear RPM at 1000 Engine RPM	1000	1000
	Pitch Line Diameter Velocity @ 1000 Engine RPM	1118 ft/min	1118 ft/min
Aftermarket PTO Model Series (2)	Chelsea Technical Service (662) 895-1052, chelseatech@parker.com	Contact PTO Manufacturer	Contact PTO Manufacturer
	Muncie Power Products Technical Service 1-800-FOR-PTOS, info@munciepower.com	Contact PTO Manufacturer	Contact PTO Manufacturer
Internal Transmission Fluid Temperature Monitor		Yes	Yes

Notes:

(1) Consult the https://www.fleet.ford.com/truckbbas/index.htm for more complete detail
(2) Consult the PTO manufacturers for more complete detail

F650/750 SUPER DUTY
PTO MOUNTING DIMENSIONS (Cont'd)
GASOLINE ENGINE & 6.7L DIESEL ENGINE


139.8
[5.51]
TO FRONT OF
TRANS. CASE
6.0
[0.24]
POWER TAKE-OF
PAD ON LH SIDE
71.1
[2.80]

GEAR DATA	TORQUE SHIFT 6-SPEED AUTOMATIC
Number Of Teeth	52
Gear Ratio	1
Pitch Diameter	108.472 mm
Pressure Angle	19.339 degrees
Angle and Hand of Helix	RH-Spur Gear
RPM @ 1000 Engine RPM	1000

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY CLIMATE CONTROL
GREEN HOUSE GAS EVAPORATIVE EMISSIONS

Pursuant to California regulation 17 CCR §95663, the specific leakage for this vehicle (as built by Ford Motor Company) is shown in the table below (see "J2727 Leakage Value" column). If the vehicle air conditioning system is modified in any way, or air conditioning systems are added, the intermediate or final-stage manufacturer must calculate the final system leakage. If desired, the spreadsheet used by Ford to calculate the J2727 Leakage is available, and can be edited to reflect the modified system. Please contact Ford BBAS to request a copy of the vehicle line specific GHG Evaporative Emissions Worksheet: https://fordbbas.com

MY	Vehicle Line	Features/Models	Evaporator	Engine	Refrigerant	Charge Size of A/C System (kg)	J2727 Leakage Value (g/yr)	Max Allowed Leakage
2022	Med Truck	F-650/750	Single	7.3L Gas	R-134a	0.750	8.3	11.3
2022	Med Truck	F-650/750	Single	6.7L Diesel	R-134a	0.751	8.4	11.3

F650/750 SUPER DUTY

GUIDELINES FOR MODIFYING FORD TRUCK WHEELBASES EQUIPPED WITH ELECTRONIC STABILITY CONTROL (ESC)

The 2022MY Medium Duty have ESC (Electronic Stability Control) as standard feature content. Modification of the wheelbase can affect vehicle performance which could result in ABS or Stability Control faults/lights. The ESC system may also have a changed response from the production wheelbase configuration, but still provides acceptable driver assistance. It is the responsibility of the alterer or final stage manufacturer to evaluate modified vehicle configurations to ensure that vehicle performance is acceptable to their customer base.

Wheelbase modifications within the noted ranges below may necessitate a reflash of the ABS/ESC module to a new calibration. Any wheelbase outside of the noted ranges below will not be supported with calibrations. The Electronic Stability Control (ESC) feature will be supported when modifying
F-Series Wheelbases (WB) as part of the intermediate or final stage upfit

F-650 F-750

- A special Build Requirement Sales Code is necessary when ordering the vehicle to specify the final upfit configuration and Center of Gravity range. Please reference the Order Guide for details.
- Do not add optional ESC system without knowing final upfit intention and center of gravity

Special Notes: The chassis wheelbase shall not be modified shorter than the shortest for each model (GVWR offered). For vehicles under 10K GVWR, FMVSS 126 does apply for ESC function and will need to be tested the by alterer or final stage manufacturer - refer to the Incomplete Vehicle Manual for specific FMVSS/CMVSS information

Please reference Bulletins Q-299R2 and Q-18R5 for more Information.

F650/750 SUPER DUTY
ELECTRICAL WIRING GENERAL PRACTICES
ADDITION OF LIGHTS OR ELECTRICAL DEVICES

ELECTRICAL WIRING GENERAL INFORMATION
F650/750 vehicles are equipped with a number of conveniently located electrical wiring taps. Most taps are fused, having locations under the instrument panel or in the body builder connections located forward of the cab (near the brake master cylinder),behind the cab or at the end of the frame. The circuits behind the cab or at the rear of the frame are provided to support trailer wiring requirements or the Second Unit Body (SUB) additions. The F650/750 Circuit charts have a brief description of each circuit function, wire gauge, color code and electrical schematic.

1. The Ford starting and charging systems should not be altered.
2. The completed vehicle total electrical load must not exceed the maximum output of the alternator(s).
3. Do not route or attach electrical wires to fuel lines.
4. Engine compartment wiring must not be rerouted in any manner.
5. The 7.3L gas engine requires one or two batteries, and the 6.7L diesel engine requires two or three batteries wired in parallel for proper starting operation. These must not be isolated. Do not modify the Glow Plugs Power Circuits.
6. Ford recommends that all additional underhood and underbody wiring:
   - Be cross-linked polyethylene, or equivalent, high temperature insulation wire 125° C [257° F] minimum rating.
   - Meet SAE specifications J1128 type SXL, GXL or TXL.
   - Meet SAE J1127 type SGX or STX for battery cables.
   - Be protected with nylon convoluted tubing.
   - Be located so as to avoid or minimize restriction of airflow through the engine compartment, underbody and fuel system.
   - Be of sufficient length to be properly routed, so as not to interfere with operating zones of such components as the transmission linkage.
   - Not be routed near the exhaust system or any other source of high heat; melted insulation can result in electrical shorts and system failure.
   - Be routed away from hostile surfaces and sharp edges and be secured in its intended location.
   - Be protected by rubber grommets when it passes through body or frame openings. Use customer access pass-thru circuits provided to avoid additional openings between passenger and engine compartments.
   - Be protected from electrical shorts by fuses or circuit breakers.
   - Be routed at least 38 mm [1.5 in] away from engine.
7. Interior wiring not exposed to high temperatures may be SAE approved, general purpose wire.
8. Ground the second unit body to the frame in at least two locations, and if required, add an additional frame to engine ground cable to improve the ground path to the battery.
9. Splicing into circuitry relating to the powertrain control systems is not acceptable because of the adverse effect on the electrical system operation.
10. Batteries must be disconnected before welding to body and chassis components. Note that disconnecting the batteries will result in a memory loss on electronic engine/transmission controlled vehicles. Refer to The 2016 and later F650/750 Cutting and Welding bulletin available at https://fordbbas.com under the “Bulletins” tab. The vehicle will require several miles of driving in various driving modes to restore its memory and regain optimum operating conditions.
11. Electrical connections exposed to the elements should be appropriately protected.
12. Do not ground the body to the transmission or transmission crossmember.
13. Ignition circuit of any engine should not be altered.
14. Alternator circuit wiring must not be altered by cutting, soldering or splicing.
15. Some head lamps are plastic and have protective coatings which can be damaged by solvents or tape. Refer to the Owner’s Guide for proper cleaning procedures.
16. For convenience, F650/750 has (2) 14-gauge blunt cut pass through circuits located above the drivers footwell. These are unfused, and run to the body builder connector which is either behind the cab or at the end of the frame. See the Customer Access Circuits charts for further information regarding pass-thru circuits.
17. Electrical bulbs are listed in the Owner’s Manual Bulb Chart. Check for the “DOT” marking on the bulb base which means the bulb meets U.S. “DOT” standards. Bulbs without the “DOT” marking or that produce different colors other than the original bulbs as listed in the bulb chart, may affect the lamps light output, aim, glare and your safety; in addition, such bulbs may burn out early or damage the lamp.
18. F650/750 vehicles are equipped with a clean tachometer output (CTO) wiring tap. The tap is designated circuit CE913 (BU) and is located cavity 12 in underhood upfitter connector.This tap should be used if a tachometer signal is required. The signal is digital and requires a digital tachometer. The signal pulse rate is half the number of engine cylinders per revolution (i.e., 4 for 6.7L diesel, 5 for 7.3L gasoline).
19. F650/750 vehicles are also equipped with a vehicle speed out (VSO). The VSO tap is designated circuit VMC05 (VT/OG). The tap is located cavity 10 in underhood upfitter connector.The VSO tap signal frequency is 2.22 times the vehicle speed in miles per hour.

Additional Electrical information
can be accessed via the web at:
https://fordbbas.com
under the “Bulletins” tab.

F650/750 SUPER DUTY
ELECTRICAL WIRING GENERAL PRACTICES
ADDITION OF LIGHTS OR ELECTRICAL DEVICES

This section provides instructions for the addition of electrical devices to the vehicle electrical system by body builders.

Vehicles stored on site should have the negative battery cable disconnected to minimize a “Dead Battery” situation. This applies to both “incomplete” and “complete” vehicles in storage.

After all electrical or vehicle modifications, perform on-board diagnostics to the Body Control Module (BCM). Road test vehicle and re-run the on-board diagnostics to verify that no DTCs are present. If DTCs are generated perform the appropriate diagnostic procedures and repairs. Vehicle operation (engine, transmission and vehicle lighting) may be affected if DTCs are not serviced.

F/CMVSS, U.S. and Canadian RFI Requirements

1. All Ford vehicles built and fully completed by Ford comply with F/CMVSS No. 108, “Lamps, Reflective Devices and Associated Equipment” and other applicable F/CMVSS that affect electrical components. Care must be taken that modifications do not conceal, alter or change components installed or provided by Ford Motor Company to achieve this conformance.
2. Incomplete vehicles (i.e., Chassis Cab, Stripped Chassis, etc.) will conform to the F/CMVSS according to the provisions and conditions stated in the Incomplete Vehicle Manual (IVM) attached to each incomplete vehicle.
3. Devices that emit radio frequency (RF) energy, such as AM/FM radios and radio-controlled security systems, marketed for sale or use in the United States are subject to the rules and regulations of the Federal Communications Commission (FCC) 47 CFR Parts 2 and 15.

   These rules specify the following conditions of operation:

   > This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
   >
   > (1) This device may not cause harmful interference, and
   >
   > (2) this device must accept any interference received, including interference that may cause undesired operation.

   In addition, the FCC’s Rules may require the device to be tested and found to comply with various RF interference emission limits before it may be marketed. The FCC establishes different limits according to the particular use and installation of RF devices. In some cases, a grant of equipment authorization from the FCC also must be obtained before any RF device may be marketed. Labeling with certain FCC information may also be required.

   To ensure continued compliance with the FCC’s requirements, the owner, user, custom manufacturer, or service technician must not modify or change the RF device in a manner not expressly approved by Ford Motor Company. Such modifications could void the authority to operate the device.
4. All vehicles powered by spark ignition internal combustion engines (e.g., gasoline or liquid petroleum gas engines) and manufactured in Canada or for sale or use in Canada are subject to the Canadian “Regulations for the Control of Interference to Radio Reception” per Interference-Causing Equipment Standard (ICES-002) and applicable test method according to “CAN/CSAC108.4-M06”. Violation of these regulations is punishable by fine or imprisonment. Ford-built incomplete vehicles other than stripped chassis are designed and manufactured to be capable of meeting the regulatory requirements or such modifications thereof as may be authorized by the Canadian Department of Communications. However, because Ford has no control over how an incomplete vehicle is completed by subsequent stage manufacturers, Ford does not represent that the completed vehicle incorporating the Ford-built components will comply with applicable requirements.

Routing & Clipping

5. It is strongly recommended that wiring in areas of heavy rework, or in areas where welding operations are to be performed, be removed prior to the rework operations and reinstalled after the rework is completed. The Instrument Panel (IP) cluster, Powertrain Control Module (PCM), Ancillary Translator Module (ATM), and Body Control Module (BCM) must be disconnected before any electrical welding is performed, otherwise module damage may result. If wire removal is not practical, the wires must be shielded from damage due to the rework and welding heat. All components and wiring should be reinstalled as closely as possible to the way it was installed before removal. Refer to The 2016 and later F650/750 Cutting and Welding bulletin available at https://fordbbas.com under the “Bulletins” tab.
6. Wire routings of newly installed components or wire routing revisions of the Ford harnesses necessitated by reworks must conform to the following:
   - Wires routed through holes in sheet metal or castings must have the hole edges protected by a grommet.
   - Wires should be routed to avoid metal edges, screws, trim fasteners and abrasive surfaces. When such routings are not possible, protective devices (shields, caps, etc.) must be used to protect the wires and when wires must cross a metal edge the edge should be covered with a protective shield and the wiring fastened within 3 inches of the edge.
   - Wires must be routed to provide at least 3 inches clearance to moving parts, unless positively fastened or protected by a conduit.
   - Existing heat shields, insulation, and wire shielding/twisting must be maintained.
   - Wire routings should avoid areas where temperatures exceed 85° C [180° F] and a minimum clearance of 231 mm [9 in] should be maintained from exhaust system components. Where compliance with this requirement is not possible, high temperature insulation and heat shields are required.
   - When wiring is routed between two members where relative motion can occur the wiring should be secured to each member, with enough wire slack to allow flexing without damage to the wire.
   - Wiring to all circuit components (switches, relays, etc.) in exposed locations must provide a drip loop to prevent moisture from being conducted into the device via the wire connection.
   - Routing wires into areas exposed to wheel wash should be avoided. When such routings cannot be avoided, adequate clipping or protective shields are required to protect the wires from stone and ice damage.
   - The wire retainers and grommets installed by the assembly plant are usually designed to accommodate only the Ford-installed wires. Additional wiring or tubing should be retained by additional clips. When added wires or tubes are routed through sheet metal panels, new holes, with proper wire protection and sealing, must be used.
   - All wiring connections to components of the factory-installed system must be accomplished by using the proper mating wire termination. (Connections on studs and ground connections must use eyelet terminations, connections to female bullets must terminate in male bullets, etc.)

Splice/Repair

When necessary to splice wire for repair or circuit length revisions, the following guide should be followed:

- Wire ends should be stripped making sure that individual conductor strands are not damaged.
- When soldering, make sure an adequate mechanical joint exists before applying solder. Use only rosin core solder — never acid core.
- For crimp joints, use butt-type metal barrel fasteners and a proper tool (such as Motorcraft crimp tool S-9796) specifically designated for this type of work.
- Splice joints must be adequately sealed and insulated. Adhesive-lined heat shrink tubing is highly recommended to cover soldered and bare metal barrel crimp joints.
- The most durable splice joint will be bare metal barrel crimped, flow-soldered and covered with adhesive lined heat shrink tubing. This is recommended as the preferred splice joint.

Circuit Protection

1. Modification to existing vehicle wiring should be done only with extreme caution and consideration of effects on the completed vehicle electrical system. Anticipated circuitry should be studied to ensure that adequate circuit protection will exist and that feedback loops are not created.
2. Any added circuitry must be protected by a fuse or circuit protection device installed by the bodybuilder.
3. **Never** drive additional electrical load directly from the Body Control Module (BCM) output. The BCM output must drive an auxiliary relay coil only. If you try to drive an aftermarket electrical load directly, the BCM will likely disable the output and you may have to replace the BCM.
4. Never increase the rating of a factory installed fuse or circuit breaker.
5. For added lamp loads, the “Bulb Chart” on a following page will aid in determination of common lamp current draws.
6. It is the body builder’s responsibility to use sound engineering judgment when making any modifications to a vehicle, and the body builder is responsible for ensuring that all modifications made are appropriate for the intended vehicle application.

Guidelines for Powertrain Control System Application

All Powertrain Control Module (PCM) wiring, in particular the 12A581 and 14401, must be a minimum of 51 mm [2 in] from secondary ignition coil wires and at least 102 mm [4 in] from the distributor, ignition coil tower, starter motor and starter motor wiring as well as 102 mm [4 in] from the alternator output wiring. These clearances apply in particular to all PCM sensor and actuator pigtail wiring. PCM wires shall not be in the same bundle as other high-current non-PCM circuits (e.g., tachometer wire from coil to Thick Film Ignition Module (TFI), power seat/ door lock/window, horn, alternator regulator) for a distance of more than 20 inches.

Additional Electrical information can be accessed via the web at:
https://fordbbas.com
under the “Bulletins” tab.

NOTE: The final stage manufacturer is responsible for ensuring that the final vehicle configuration meets all applicable regulatory requirements.

F650/750 SUPER DUTY
ELECTRICAL WIRING GENERAL PRACTICES
ADDITION OF LIGHTS OR ELECTRICAL DEVICES (Cont'd)

Modern Ford vehicle electronic controls provide Ford customers with superior reliability and diagnostic capability when vehicle modifications are performed in line with the recommendations detailed here. Many traditional modification methods may no longer be compatible with these modern electronic modules.
Although there are many points in the truck electrical system to connect additional circuits certain connection points are recommended for reliability and convenience. This section defines the recommended connection points for each Ford Truck model and the maximum electrical loads allowable.

CAUTION: Improper electrical tie-ins may affect vehicle operation (i.e., engine, transmission, lighting).
After all electrical or vehicle modifications, perform the on-board diagnostics procedures as described in the powertrain control/emissions diagnosis manual to clear all diagnostic trouble codes (DTCs). In addition, perform self-test to the BCM and test all lighting outputs. Road test vehicle and rerun the on-board diagnostics to verify that no DTCs are present. If DTCs are generated, perform the appropriate diagnostic procedures and repairs. Vehicle operation (engine, transmission, lighting) may be affected if DTCs are not serviced.
Alternative connections or wiring practices are not recommended as these modifications will result in other circuits becoming non-functional. Disconnect the battery negative (ground) cable and remove it from the battery carrier prior to any vehicle modification. Upon completion of body or equipment installation, all wiring should be checked for proper routing, etc. to preclude electrical shorts upon re-installation of the battery negative cable.
Do not splice into the Powertrain System (PCM-V). Connecting to any component or wires to this system may adversely affect engine/transmission operation. Likewise, do not splice into any lighting circuits as this may permanently disable the lighting circuits within the Body Control Module (BCM). Proper modification practices are fully described in this layout book.

LIGHTS CONTROLLED BY HEADLAMP SWITCH

- **F650/750**

The low beam and high beam headlamps are powered by FETs located in the Body Control Module (BCM). The headlamp switch used in the Super Duty F-Series vehicles is a low current switch designed to signal the BCM to activate all exterior lighting. The headlamp switch cannot handle any added load. A connection to any circuit in the system controlled by the headlamp switch must be done using an auxiliary relay. Rear lighting and turn signal lamp relays are provided for body builder usage. These are shown elsewhere in this document. Any "headlamp" connections must be performed on the lighting output of the BCM. The BCM headlamp output pins are capable of up to 6.8A each. They are able to handle the load of the vehicle headlamps plus the added load of a relay coil. Either an upfitter relay (inside the BJB) or an aftermarket installed relay can be used to supply the power for auxiliary headlamps.

LIGHTS CONTROLLED BY STOP LAMP SWITCH AND TURN INDICATOR SWITCH

NOTE: Splicing into the stop lamp switch can damage the Body Control Module (BCM). Splicing into the stop lamp switch on vehicles with Electronically Controlled Transmissions can interfere with the proper functioning of PCM, speed control, and anti-lock brake electronic modules. This can:

- Affect EFI engine idle speed quality.
- Prevent the Powertrain Control Module (PCM) controlled torque converter clutch from applying at throttle openings less than half-throttle.
- Deactivate anti-lock brake system operation.
- Prevent the speed control from disengaging upon braking.

A stop signal, as well as a reverse and left/right turn or stop/turn circuits are located in the body builder connector.

The stop lamp switch that is in use on Ford trucks is a mechanical switch operated by brake pedal. The BCM supports adding loads to the brake pedal switch through a circuit MAT50 - which is YE/VT wire in driver footwell. Park brake circuit is CMC25 WH/VT,which is located in the engine compartment body builder.connector, cavity 1.
Tapping into other BCM inputs, such as Door Ajar, can cause BCM failure. Under no circumstances are additional brake pedal loads to be added by directly splicing into vehicle wiring.

F650/750 Models with Hydraulic Brakes

Ford trucks are released with a mechanical stop lamp switch which contacts the brake pedal arm. If only stop lamp function is desired for the added lights, connect to circuit. MAT50, YE/VT, which can be accessed in the driver footwell (blunt cut) or in the body builder connector (to power lamps).

The turn signal switch is designed to use a low current to signal the BCM to activate turn signal and stop lamps. The switch is not designed to directly power any lamps or other electrical devices.
If both turn signal and stop lamp function are desired for added lights, access the body builder connector located behind the cab or at the end of frame. Do not splice into turn/stop circuits at the BCM or turn circuits at the multi-function switch. Splicing in those areas will damage the switch or cause the BCM to malfunction. Use the trailer tow circuits and trailer tow relays to power added turn/stop lights. Circuits are accessible at the body builder connector located behind the cab or at the end of frame; LT/Stop=YE, RT/Stop=GN.
Reverse/back-up lights must be tied-in using trailer tow relays and circuits in same manner as turn/stop lights.

ADDED LIGHTS OR ACCESSORIES CONTROLLED BY ADDED SWITCHES

This section describes the connection points for added electrical accessories when these accessories are to be controlled by added switches not a part of the Ford-released vehicle. The added switches and wiring must have sufficient electrical capacity for the accessory load and must be tied to the battery using separate fuses and a circuit protection device. Additional loads on Ford provided fuses may cause permanent BCM damage and lighting failure. Also, added current draw must not cause total loads to exceed capabilities of the base vehicle wiring.

WIPER DELAY MODULE – F650/750

The Wiper Delay Module is not internally protected for a continuous high current load greater than 9 amps and must be protected either internal to the wiper motor or via inline protection such as a properly sized circuit breaker. The existing 30 amp fuse in the fuse panel is sized for the maximum allowable in-rush current and does not provide appropriate protection to the Wiper Delay Module.

MALFUNCTION INDICATOR LIGHT (MIL)

The “Malfunction Indicator Light” is used to indicate malfunctions of the engine’s emission control system and certain powertrain emissions-related components. For all incomplete vehicles, the MIL is Ford-installed and operational in the instrument panel.

RADIO FREQUENCY INTERFERENCE (RFI)

During modifications to the vehicle, manufacturers, service technicians, owners and users should take the necessary precautions to maintain the RFI integrity of components. Both the United States and Canada have RFI regulation in effect. For any completed vehicle, additional measures may be needed to adequately suppress RFI emissions. Affected components could include spark plugs, ignition wires, ignition coils, ground straps, ignition components shields, accessory drive belts, ignition coil suppressors, the Powertrain Control Module (PCM), Ancillary Translator Module (ATM), and the Body Control Module (BCM). Guidance for installing two-way mobile radios can be found via the web at www.fordemc.com/docs download/Mobile_Radio_Guide.pdf.

Additional Electrical information
can be accessed via the web at:
https://fordbbas.com
under the “Bulletins” tab.

NOTE: The final stage manufacturer is responsible for ensuring that the final vehicle configuration meets all applicable regulatory requirements.

F650/750 SUPER DUTY
ELECTRICAL WIRING GENERAL PRACTICES
ADDITION OF LIGHTS OR ELECTRICAL DEVICES (Cont'd)

ELECTRICAL LOAD LIMITATIONS

If the **total** electrical load on a factory circuit, after the addition of electrical equipment, is less than 80% of the fuse or circuit breaker protection rating in that circuit or less than the capacity of some limiting component (switch, relay, etc.), the items to be added can be connected directly to that circuit. For fuses located in the engine compartment, the electrical load should not exceed 70% of the fuse or circuit breaker protection rating. If the total electrical load to be added on a factory circuit exceeds the value of the circuit protection, or the value of some limiting component, the items to be added **cannot** be added directly to the circuit.

- Additional loads cannot be driven by the Body control Module (BCM), they must be driven by an auxiliary relay. The coil of the relay can be fed from the factory wiring (now acting as a signal circuit) with the added wiring providing the power feed to the added electrical device through the relay power contacts. (The relay selection is important and depends on current requirements, number of cycles expected in the relay lifetime, whether the relay is to be operated intermittently or for long periods of time, and whether the relay is exposed to weather conditions or is installed in a protected area. When the current requirements of a circuit exceed the capacity of an available relay, more than one relay can be used if the circuit is wired to split the load).
- The factory wiring should not be used as a power feed to the relay power contacts or switches. Battery power is to be supplied from the starter motor solenoid positive terminal for added circuits requiring a maximum of 30 amps or directly from the battery positive terminal for added circuits requiring greater than 30 amps of current. 4 body builder switches (in cab) and associated fuses and relays (in BJB) are available for switched high current power feeds. See following pages.

Caution: Never use the stud on the underhood fuse panel as a junction point.
Circuit protection (fuses or circuit breakers) must be provided for all added wiring. The protection device rating should not exceed the current requirements for the add-on components and should be installed as close to the point of tapped power as possible.

Wire Gage

1. When adding wiring, the wire gage size should be determined as follows:
   - Where wire is spliced to extend a circuit, the added wire should have a gauge at least that of the circuit being lengthened.
   - When wire is being added to feed add-on devices, the Wire Gage Table on this page should be used.

NOTE: The current capacity of a given wire varies with temperature and type of insulation. The table, however, represents generally accepted values as a guide.

2. All added underhood or underbody wiring should have a thermoset insulation (such as Hypalon or Cross-linked polyethylene).
   The following specifications typically apply:
   - SAE specifications J1128 type SXL, GXL or TXL except for battery cables
   - SAE specifications J1127 type SGX or STX for battery cables.

WIRE GAGE TABLE

WIRE GAGE	MAXIMUM CURRENT CAPACITY (Plastic insulated copper wire)	
	Interior	Exterior
0.5	10A	10A
0.75	13A	12A
1.0	17A	14A
1.5	21A	18A
2.5	27A	26A
4.0	37A	35A
6.0	52A	47A

BULB CHARTS

BULB TRADE NUMBER	CANDLE POWER	CURRENT @ RATED VOLTAGE
67/97	4	0.69 A @ 13.5V
168	3	0.35 A @ 14.0V
192	3	0.33 A @ 13.0V
194	2	0.27 A @ 14.0V
211-2	12	0.97 A @ 12.8V
212-2	6	0.74 A @ 13.5V
578	9	0.78 A @ 12.8V
579	9	0.8 A @ 12.8V
904	4	0.69 A @ 13.5V
904NA	5.3	0.69 A @ 13.5V
906	6	0.69 A @ 13.5V
912	12	1.0 A @ 12.8V
916	2	0.54 A @ 13.5V
916NA	1.5	0.54 A @ 13.5V
921	21	1.4 A @ 12.8V
922	15	0.98 A @ 12.8V
1157A (major)	24	2.1 A @ 12.8V
1157A (minor)	2.2	0.59 A @ 14.0V
3057 (major)	32	2.1 A@ 12.8V
3057 (minor)	32	2.1 A@ 12.8V
3057K (major)	32	2.1 A@ 12.8V

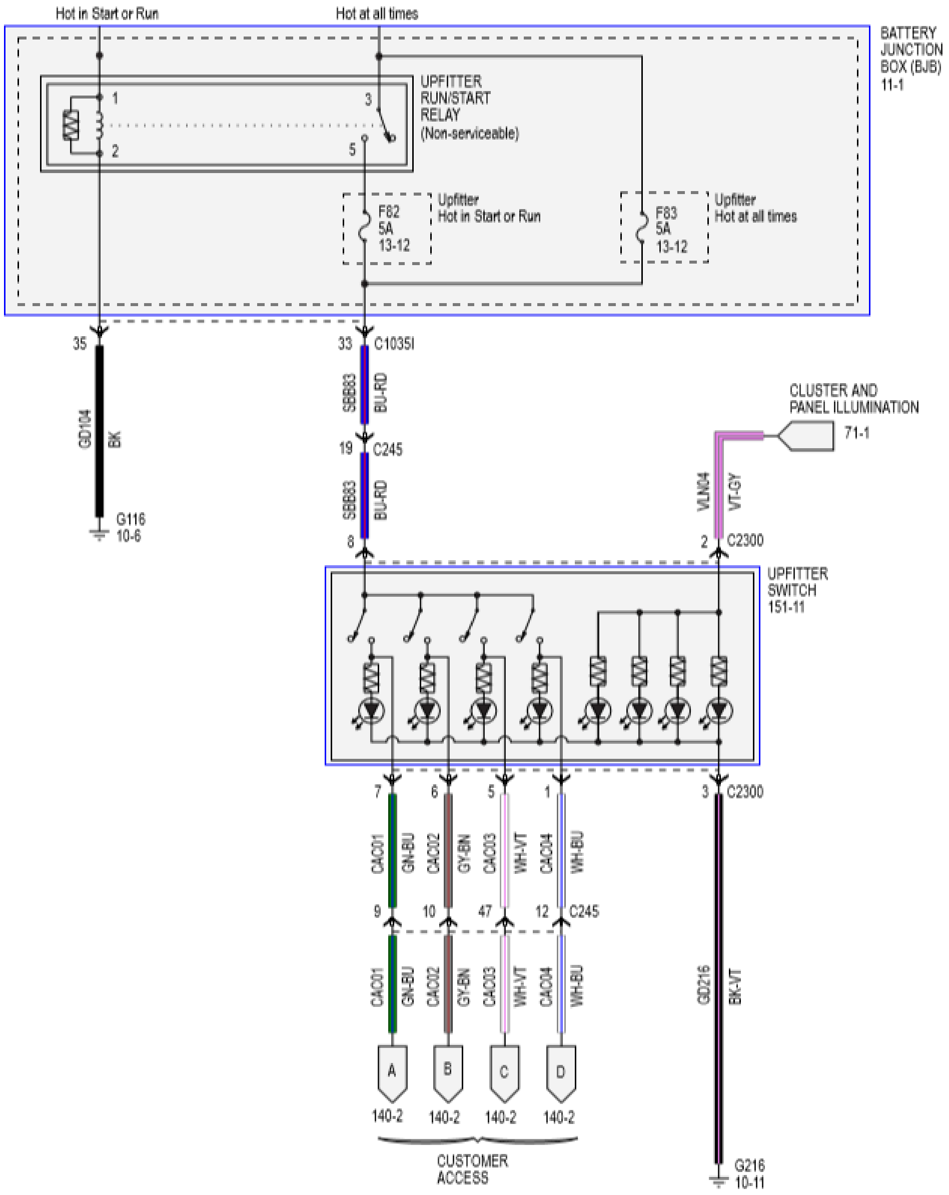
BULB TRADE NUMBER	CANDLE POWER	CURRENT @ RATED VOLTAGE
3057K (minor)	2	0.48 A @ 14.0V
3155K	21	1.6 A @ 12.8V
3156 (P27W)	32	2.1 A @ 12.8V
3157 (P27/2W) (major)	32	2.1 A @ 12.8V
3157 (P27/2W) (minor)	3	0.59 A @ 14.0V
3157A (major)	24	2.1 A @ 12.8V
3157A (minor)	2.2	0.59 A @ 14.0V
3157K (major)	32	2.1 A @ 12.8V
3157K (minor)	3	0.59 A @ 14.0V
3456K	40	2.23 A @ 12.8V
3457AK (major)	30	2.23 A @ 12.8V
3457AK (minor)	2.2	0.59 A @ 14.0V
3457K (major)	40	2.23 A @ 12.8V
3457K (minor)	3	0.59 A @ 14.0V
3757AK (major)	24	2.1 A @ 12.8V
3757AK (minor)	2.2	0.59 A @ 14.0V
4057K (major)	32	2.23 A @ 12.8V
4057K (minor)	2	0.48 A @ 14.0V
4157K (major)	32	2.23 A @ 12.8V
4157K (minor)	3	0.59 A @ 14.0V
W5W	4	0.4 A @ 12.0V

BULB TRADE NUMBER	CANDLE POWER	CURRENT @ RATED VOLTAGE
H1	117	55W @ 12.0V
H3	121	55W @ 12.0V
HB2 (9003) (low)	76	55W @ 12.0V
HB2 (9003) (high)	125	60W @ 12.0V
9005 (HB3)	135	65W @ 12.8V
9006 (HB4)	80	55W @ 12.8V
9007 (HB5) (low)	80	55W @ 12.8V
9007 (HB5) (high)	107	65W @ 12.8V
H13/9008 (low)	-	55W @ 12.8V
H13/9008 (high)	-	65W @ 12.8V
H7	125	55W @ 12.0V
H9	167	65W @ 12.0V
H11	107	55W @ 12.8V
H6054 (low)	-	55W @ 12.8V
H6054 (high)	-	65W @ 12.8V
9140	48	40W @ 12.8V
9145 (H10)	65	45W @ 12.8V

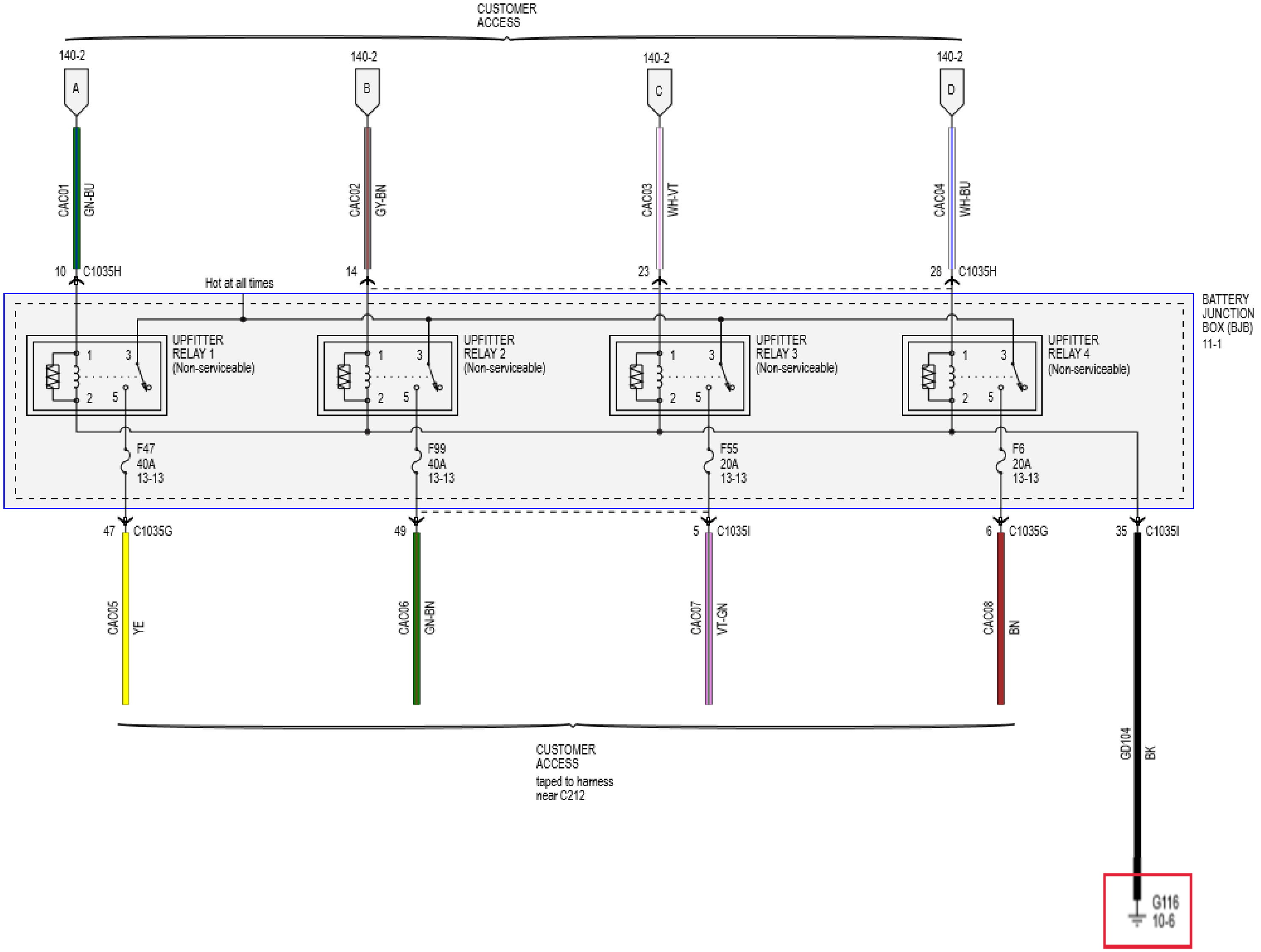
Additional Electrical information
can be accessed via the web at:
https://fordbbas.com
under the “Bulletins” tab.

NOTE: The final stage manufacturer is responsible for ensuring that the final vehicle configuration meets all applicable regulatory requirements.

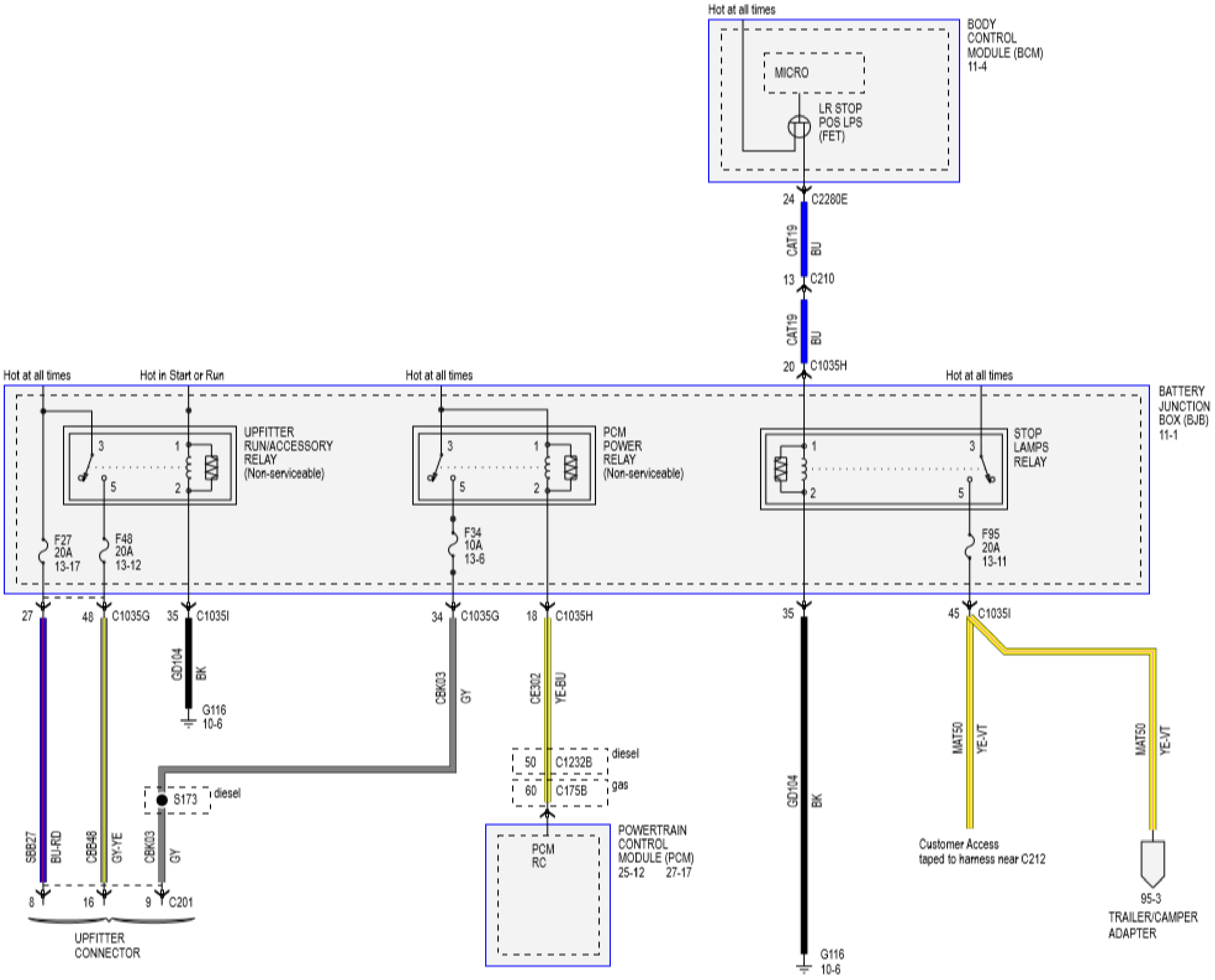
F650/750 SUPER DUTY
ELECTRICAL WIRING
CUSTOMER ACCESS SCHEMATICS (Cont'd)


Hot in Start or Run
Hot at all times
BATTERY JUNCTION BOX (BJB)
11-1
1
3
2
5
UPFITTER RUN/START RELAY (Non-serviceable)
F82
5A
13-12
Upfitter
Hot in Start or Run
F83
5A
13-12
Upfitter
Hot at all times
35
GD104
BK
G116
10-6
33
C1035I
SBB83
BU-RD
19
C245
SBB83
BU-RD
8
CLUSTER AND PANEL ILLUMINATION
71-1
VLN04
VT-GY
2
C2300
UPFITTER SWITCH
151-11
7
6
5
1
3
C2300
CAC01
GN-BU
CAC02
GY-BN
CAC03
WH-VT
CAC04
WH-BU
9
10
47
12
C245
CAC01
GN-BU
CAC02
GY-BN
CAC03
WH-VT
CAC04
WH-BU
GD216
BK-VT
A
B
C
D
140-2
140-2
140-2
140-2
CUSTOMER ACCESS
G216
10-11

F650/750 SUPER DUTY
ELECTRICAL WIRING
CUSTOMER ACCESS SCHEMATICS (Cont'd)

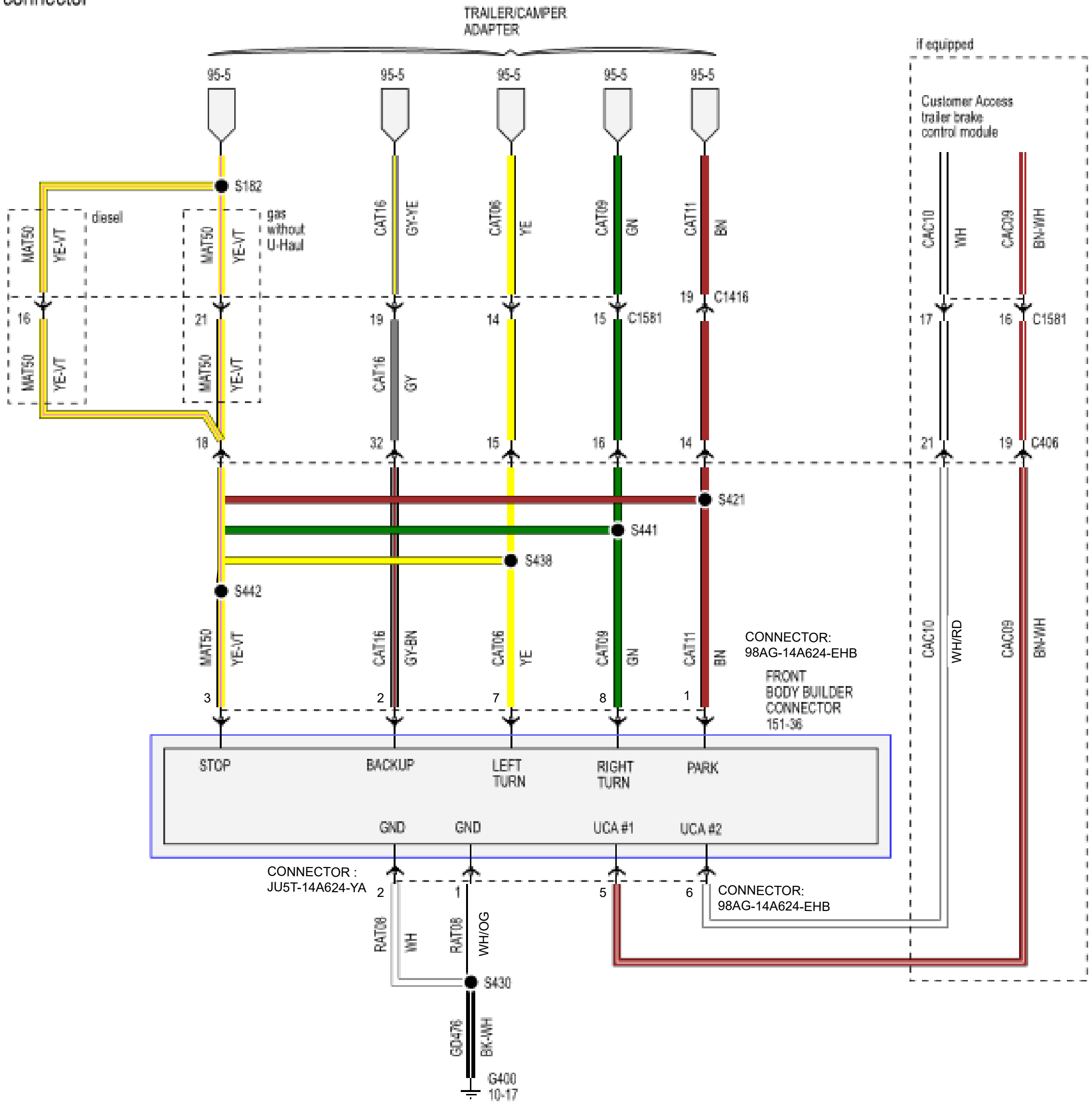

CUSTOMER ACCESS
140-2
A
140-2
B
140-2
C
140-2
D
CAC01
GN-BU
CAC02
GY-BN
CAC03
WH-VT
CAC04
WH-BU
10
C1035H
14
23
28
C1035H
Hot at all times
BATTERY JUNCTION BOX (BJB)
11-1
UPFITTER RELAY 1 (Non-serviceable)
UPFITTER RELAY 2 (Non-serviceable)
UPFITTER RELAY 3 (Non-serviceable)
UPFITTER RELAY 4 (Non-serviceable)
1
3
2
5
F47
40A
13-13
F99
40A
13-13
F55
20A
13-13
F6
20A
13-13
47
C1035G
49
5
C1035I
6
C1035G
35
C1035I
CAC05
YE
CAC06
GN-BN
CAC07
VT-GN
CAC08
BN
GD104
BK
CUSTOMER ACCESS
taped to harness near C212
G116
10-6

F650/750 SUPER DUTY
ELECTRICAL WIRING
CUSTOMER ACCESS SCHEMATICS (Cont'd)


Hot at all times
BODY CONTROL MODULE (BCM) 11-4
MICRO
LR STOP POS LPS (FET)
24 C2280E
CAT19 BU
13 C210
CAT19 BU
20 C1035H
Hot at all times
Hot in Start or Run
Hot at all times
Hot at all times
BATTERY JUNCTION BOX (BJB) 11-1
3 1 5 2
UPFITTER RUN/ACCESSORY RELAY (Non-serviceable)
3 1 5 2
PCM POWER RELAY (Non-serviceable)
1 3 2 5
STOP LAMPS RELAY
F27 20A 13-17
F48 20A 13-12
F34 10A 13-6
F95 20A 13-11
27
48 C1035G
35 C1035I
34 C1035G
18 C1035H
35
45 C1035I
GD104 BK
G116 10-6
CBK03 GY
CE302 YE-BU
50 C1232B diesel
60 C175B gas
S173 diesel
SBB27 BU-RD
CBB48 GY-YE
CBK03 GY
8 16 9 C201
UPFITTER CONNECTOR
PCM RC
POWERTRAIN CONTROL MODULE (PCM) 25-12 27-17
GD104 BK
G116 10-6
MAT50 YE-VT
MAT50 YE-VT
Customer Access taped to harness near C212
95-3 TRAILER/CAMPER ADAPTER

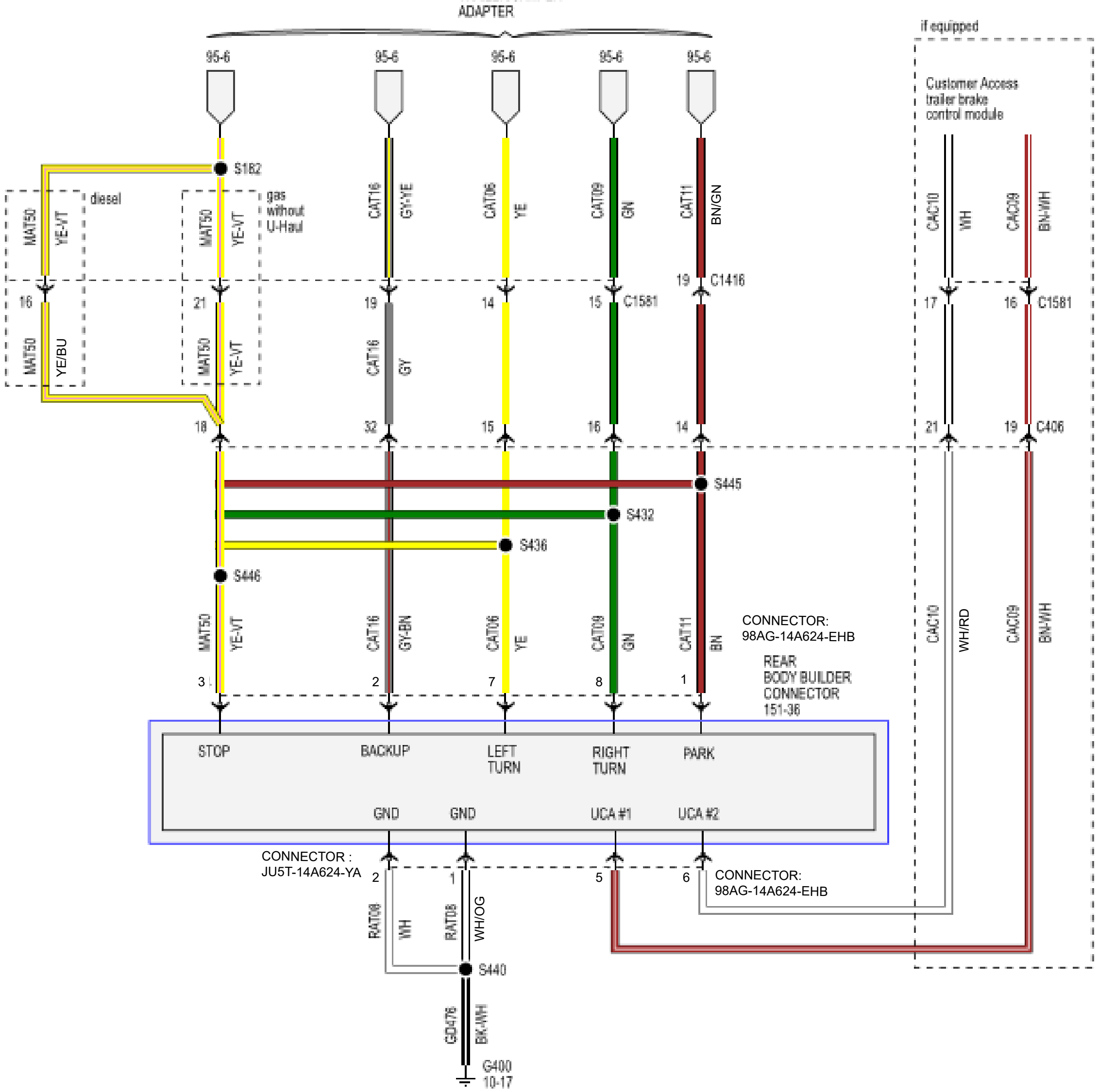
F650/750 SUPER DUTY
ELECTRICAL WIRING
CUSTOMER ACCESS SCHEMATICS (Cont'd)

Body Builder - back of cab w/o trailer tow connector


TRAILER/CAMPER ADAPTER
95-5
95-5
95-5
95-5
95-5
if equipped
Customer Access trailer brake control module
S182
diesel
gas without U-Haul
MAT50 YE-VT
MAT50 YE-VT
CAT16 GY-YE
CAT06 YE
CAT09 GN
CAT11 BN
CAC10 WH
CAC09 BN-WH
19 C1416
C1581
16 21 19 14 15
17 16 C1581
MAT50 YE-VT
MAT50 YE-VT
CAT16 GY
18 32 15 16 14
21 19 C406
S421
S441
S438
S442
MAT50 YE-VT
CAT16 GY-BN
CAT06 YE
CAT09 GN
CAT11 BN
CAC10 WH/RD
CAC09 BN-WH
CONNECTOR: 98AG-14A624-EHB
FRONT BODY BUILDER CONNECTOR 151-36
3 2 7 8 1
STOP
BACKUP
LEFT TURN
RIGHT TURN
PARK
GND
GND
UCA #1
UCA #2
CONNECTOR : JU5T-14A624-YA
2 1 5 6
CONNECTOR: 98AG-14A624-EHB
RAT08 WH
RAT08 WH/OG
S430
GD476 BK-WH
G400 10-17

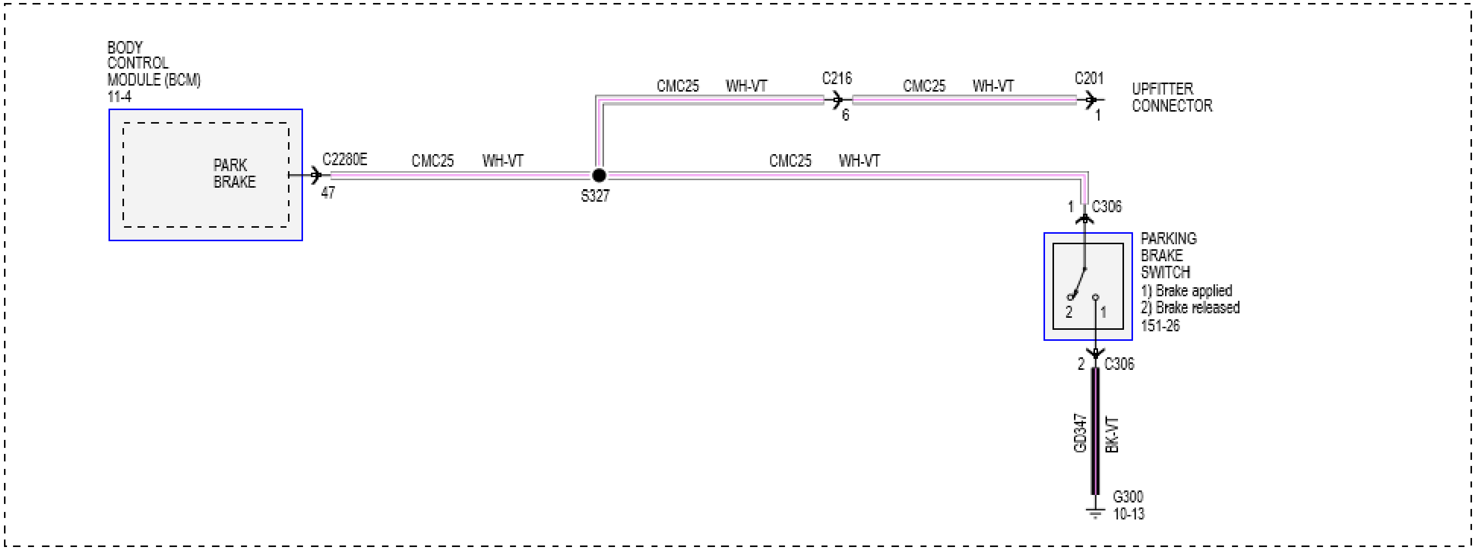
F650/750 SUPER DUTY
ELECTRICAL WIRING
CUSTOMER ACCESS SCHEMATICS (Cont'd)

Body Builder - end of frame w/o trailer tow connector

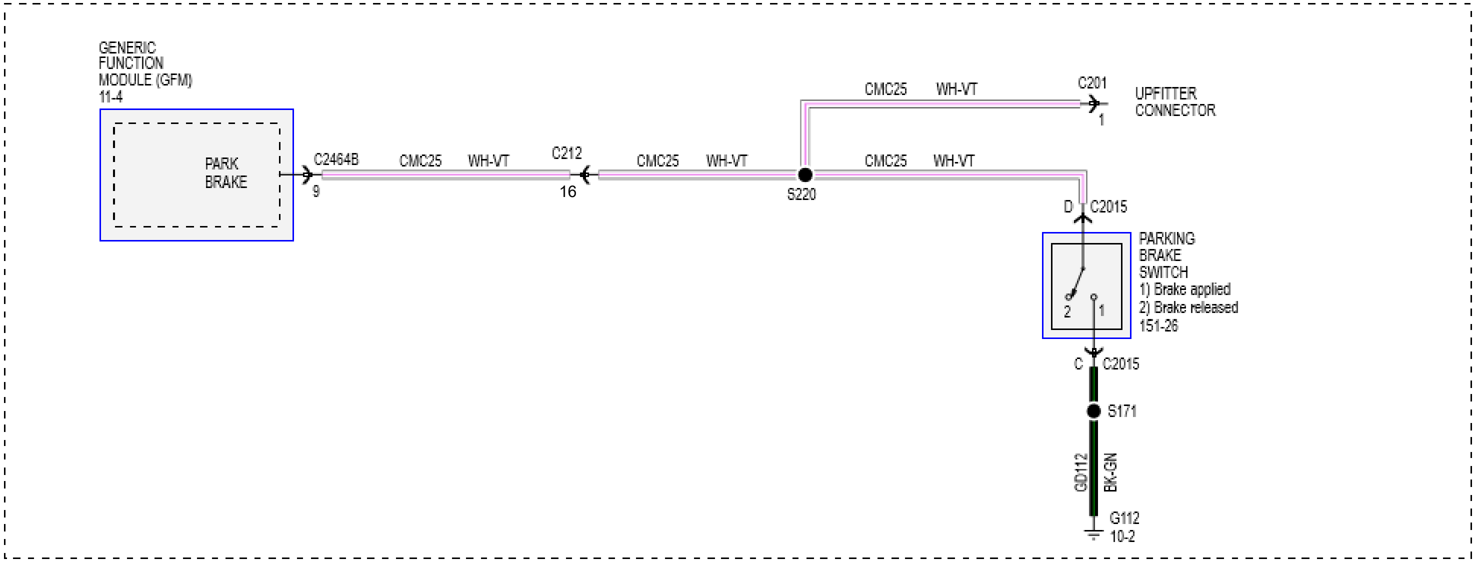

TRAILER/CAMPER ADAPTER
95-6
95-6
95-6
95-6
95-6
if equipped
Customer Access trailer brake control module
S182
diesel
gas without U-Haul
MAT50 YE-VT
MAT50 YE-VT
CAT16 GY-YE
CAT06 YE
CAT09 GN
CAT11 BN/GN
CAC10 WH
CAC09 BN-WH
19 C1416
16
21
19
14
15 C1581
17
16 C1581
MAT50 YE/BU
MAT50 YE-VT
CAT16 GY
18
32
15
16
14
21
19 C406
S445
S432
S436
S446
MAT50 YE-VT
CAT16 GY-BN
CAT06 YE
CAT09 GN
CAT11 BN
CAC10 WH/RD
CAC09 BN-WH
CONNECTOR: 98AG-14A624-EHB
REAR BODY BUILDER CONNECTOR 151-36
3
2
7
8
1
STOP
BACKUP
LEFT TURN
RIGHT TURN
PARK
GND
GND
UCA #1
UCA #2
CONNECTOR : JU5T-14A624-YA
2
1
5
6
CONNECTOR: 98AG-14A624-EHB
RAT08 WH
RAT08 WH/OG
S440
GD476 BK-WH
G400 10-17

F650/750 SUPER DUTY
ELECTRICAL WIRING
CUSTOMER ACCESS SCHEMATICS (Cont'd)

hydraulic brakes

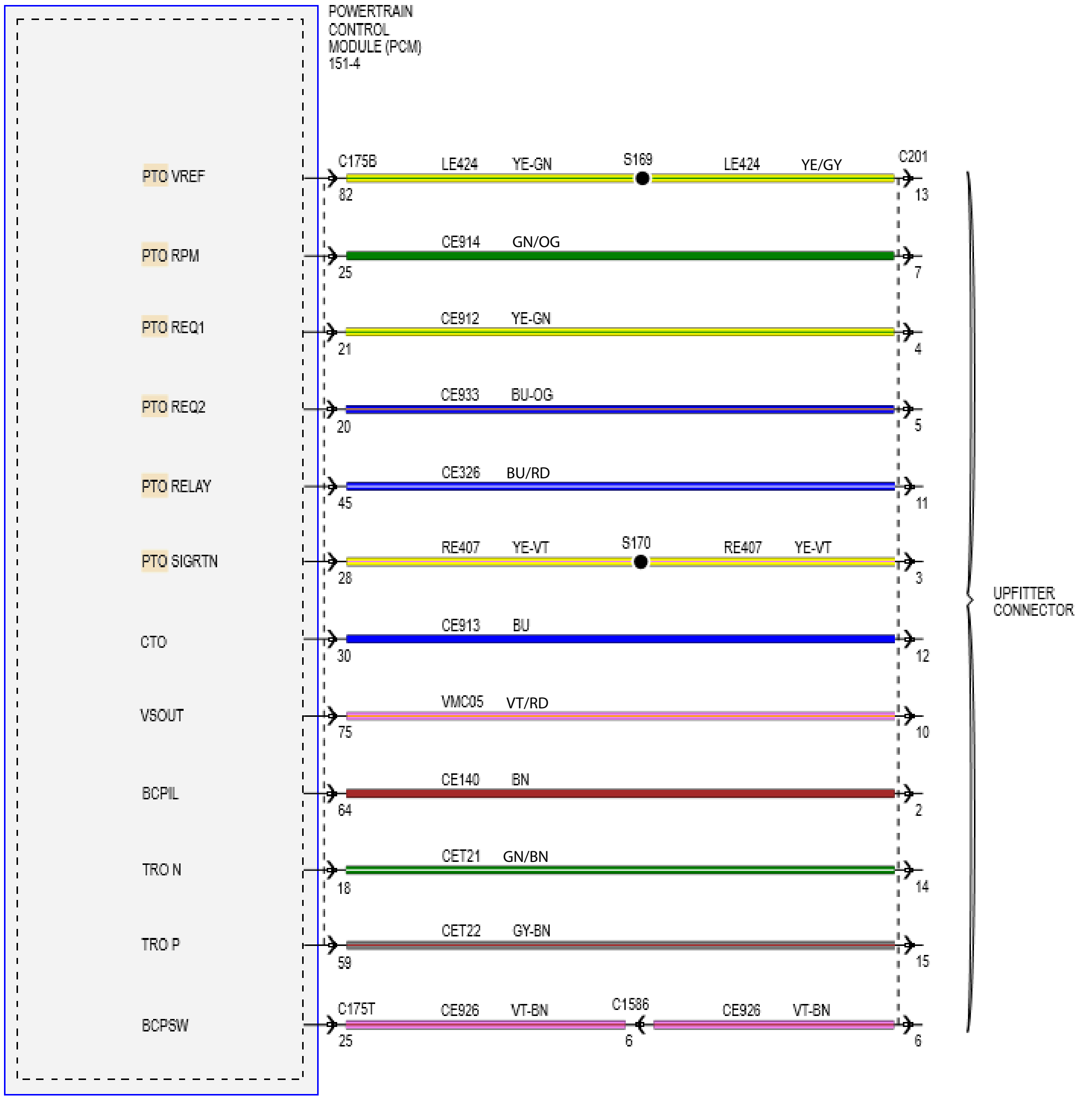

BODY
CONTROL
MODULE (BCM)
11-4
PARK
BRAKE
C2280E
47
CMC25
WH-VT
S327
CMC25
WH-VT
C216
6
CMC25
WH-VT
C201
1
UPFITTER
CONNECTOR
CMC25
WH-VT
1
C306
PARKING
BRAKE
SWITCH
1) Brake applied
2) Brake released
151-26
2
1
2
C306
GD347
BK-VT
G300
10-13

air brakes


GENERIC
FUNCTION
MODULE (GFM)
11-4
PARK
BRAKE
C2464B
9
CMC25
WH-VT
C212
16
CMC25
WH-VT
S220
CMC25
WH-VT
C201
1
UPFITTER
CONNECTOR
CMC25
WH-VT
D
C2015
PARKING
BRAKE
SWITCH
1) Brake applied
2) Brake released
151-26
2
1
C
C2015
S171
GD112
BK-GN
G112
10-2

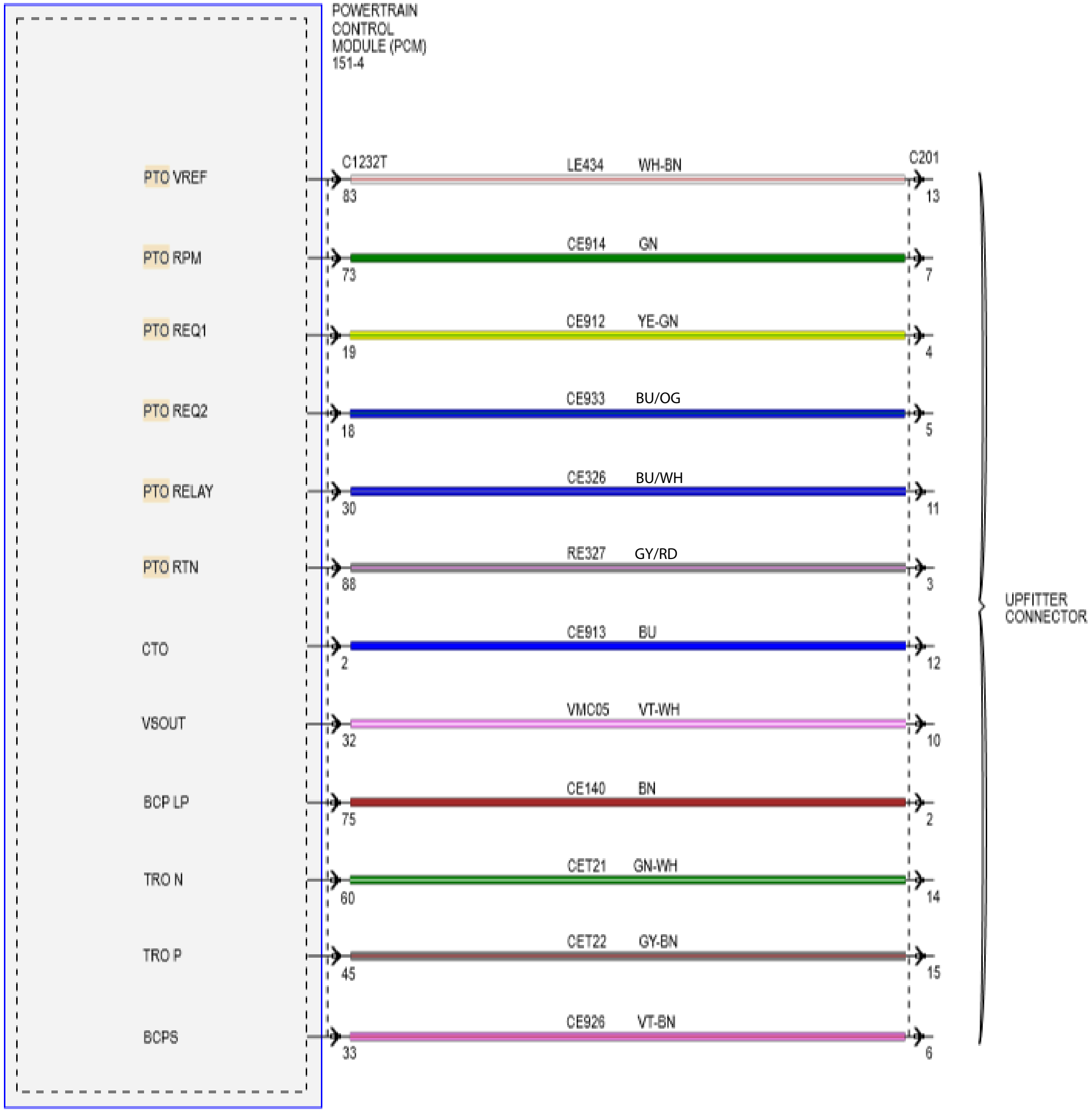
F650/750 SUPER DUTY
ELECTRICAL WIRING
CUSTOMER ACCESS SCHEMATICS (Cont’d)

GAS


POWERTRAIN CONTROL MODULE (PCM) 151-4
PTO VREF
C175B
82
LE424
YE-GN
S169
LE424
YE/GY
C201
13
PTO RPM
25
CE914
GN/OG
7
PTO REQ1
21
CE912
YE-GN
4
PTO REQ2
20
CE933
BU-OG
5
PTO RELAY
45
CE326
BU/RD
11
PTO SIGRTN
28
RE407
YE-VT
S170
RE407
YE-VT
3
CTO
30
CE913
BU
12
VSOUT
75
VMC05
VT/RD
10
BCPIL
64
CE140
BN
2
TRO N
18
CET21
GN/BN
14
TRO P
59
CET22
GY-BN
15
BCPSW
C175T
25
CE926
VT-BN
C1586
6
CE926
VT-BN
6
UPFITTER CONNECTOR

F650/750 SUPER DUTY
ELECTRICAL WIRING
CUSTOMER ACCESS SCHEMATICS (Cont'd)

DIESEL

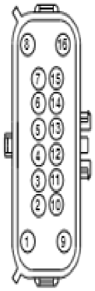

POWERTRAIN CONTROL MODULE (PCM) 151-4
C1232T
C201
PTO VREF
83
LE434
WH-BN
13
PTO RPM
73
CE914
GN
7
PTO REQ1
19
CE912
YE-GN
4
PTO REQ2
18
CE933
BU/OG
5
PTO RELAY
30
CE326
BU/WH
11
PTO RTN
88
RE327
GY/RD
3
CTO
2
CE913
BU
12
VSOUT
32
VMC05
VT-WH
10
BCP LP
75
CE140
BN
2
TRO N
60
CET21
GN-WH
14
TRO P
45
CET22
GY-BN
15
BCPS
33
CE926
VT-BN
6
UPFITTER CONNECTOR

F650/750 SUPER DUTY
ELECTRICAL WIRING
CUSTOMER ACCESS SCHEMATICS (Cont'd)

C201

12A581

INLINE TO UPFITTER (part# N/A)

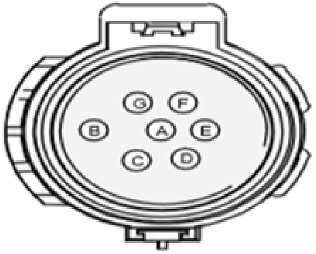


Pin	Circuit	Gauge	Circuit Function	Qualifier
1	CMC25 (WH-VT)	18	SWITCH - PARKING BRAKE	hydraulic brakes
1	CMC25 (WH-VT)	20	SWITCH - PARKING BRAKE	air brakes
2	CE140 (BN)	20	CTRL MOD. - POWERTRAIN # BATTERY CHARGE PROTECT INDICATOR (BCHPL) (BCPIL)	
3	RE407 (YE-VT)	20	CTRL MOD. - POWERTRAIN # SIGNAL RETURN COWL (C-SIGRTN) (SIGRTN-C)	7.3L
3	RE327 (GY-RD)	20	CTRL MOD. - POWERTRAIN # POWER TAKE OFF RETURN (PTO_GND)	Diesel
4	CE912 (YE-GN)	20	SWITCH - POWER TAKE OFF REQUEST 1 (PTO) (PTORS1)	
5	CE933 (BU-OG)	20	SWITCH - POWER TAKE OFF REQUEST 2 (PTORS2)	7.3L
5	CE933 (BU-OG)	20	SWITCH - POWER TAKE OFF REQUEST 2 (PTORS2)	Diesel
6	CE926 (VT-BN)	20	SWITCH - BATTERY CHARGE PROTECT MODE (BCPSW)	
7	CE914 (GN)	20	Power Take Off - RPM Diesel - wire color 'GN' 7.3L - wire color 'GN/OG' Both are pin - 7	
8	SBB27 (BU-RD)	14	FUSE - 27 OR CIRCUIT BREAKER	
9	CBK03 (GY)	16	FUSE-34 OR CIRCIUT BREAKER (VPWR 3)	
10	VMC05 (VT-RD)	20	CTRL MOD. - VEHICLE SPEED OUTPUT (VSOUT)	7.3L
10	VMC05 (VT-WH)	18	CTRL MOD. - VEHICLE SPEED OUTPUT (VSOUT)	Diesel
11	CE326 (BU-WH)	20	Circuit Function: Power Take Off Relay	7.3L
11	CE326 (BU-RD)	20	Circuit Function: Power Take Off Relay	Diesel
12	CE913 (BU)	20	CTO - Clean tacho meter take off	7.3L
12	CE913 (BU)	18	CTO - Clean tacho meter take off	Diesel
13	LE424 (YE-GY)	20	CTRL MOD. - POWERTRAIN # VOLTAGE REFERENCE COWL (C-VREF)	7.3L
13	LE434 (WH-BN)	20	CTRL MOD. - POWERTRAIN # VOLTAGE REFERENCE POWER TAKE OFF (PTO_VREF)	Diesel
14	CET21 (GN-WH)	20	CTRL MOD. - POWERTRAIN # TRANSMISSION RANGE OUTPUT NEUTRAL (TRO-N)	
15	CET22 (GY-BN)	20	CTRL MOD. - POWERTRAIN # TRANSMISSION RANGE OUTPUT PARK (TRO-P)	
16	CBB48 (GY-YE)	14	FUSE - 48 OR CIRCUIT BREAKER	

C4099

14406

TRAILER **U-HAUL CONNECTOR (PART# N/A)**



Pin	Circuit	Gauge	Circuit Function	Qualifier
A	CAT16 (GY-BN)	14	RELAY - TRAILER TOW BACKUP LAMPS	
B	RAT08 (WH)	10	CTRL MOD. - TRAILER TOW # RETURN (USA ONLY- COLOR TO SAE 1239 EXCEPTION TO PSF)	
C	CAT18 (BU)	12	CONTROLLER - TRAILER TOW STOP LAMPS	
D	CAT09 (GN)	10	CTRL MOD. - TRAILER TOW # TURN SIGNAL RIGHT (COLOR TO SAE 1239)	
E	CAT14 (BU)	12	RELAY - TRAILER TOW BATTERY CHARGING (COLOR TO SAE 1239)	
F	CAT11 (BN)	12	CTRL MOD. - TRAILER TOW # PARK LAMPS (COLOR TO SAE 1239)	
G	CAT06 (YE)	10	CTRL MOD. - TRAILER TOW # TURN SIGNAL LEFT (COLOR TO SAE 1239)	

F650/750 SUPER DUTY

F650/750 STATIONARY ELEVATED IDLE CONTROL OVERVIEW

Stationary Elevated Idle Control (SEIC)

- A power train control module (PCM) strategy that provides elevated engine speed to drive auxiliary commercial equipment such as hydraulic pumps, generators, air compressors; or maintain vehicle battery charge under extreme electrical demands.

- SEIC is standard in all PCM's for F-650/750 trucks.

- 6.7L diesel only - Split shaft mode engages the transmission output shaft.

Customer Access Wires for SEIC and VSO/ CTO/PARK Signals

- The final stage manufacturer or up-fitter is required to supply the customer interface equipment.

- Additional information in the "Circuit Descriptions" section.

- SEIC Circuits are now located underhood on the Drivers Side as shown in the picture below

Transmission Power Take off (PTO) Gear and Port

- Available on F-650/750.

- Available for TorqShift™ 6-speed automatic transmission by ordering “Transmission Power Take-Off Provision”. The PTO gear is direct-splined to the torque converter impeller.

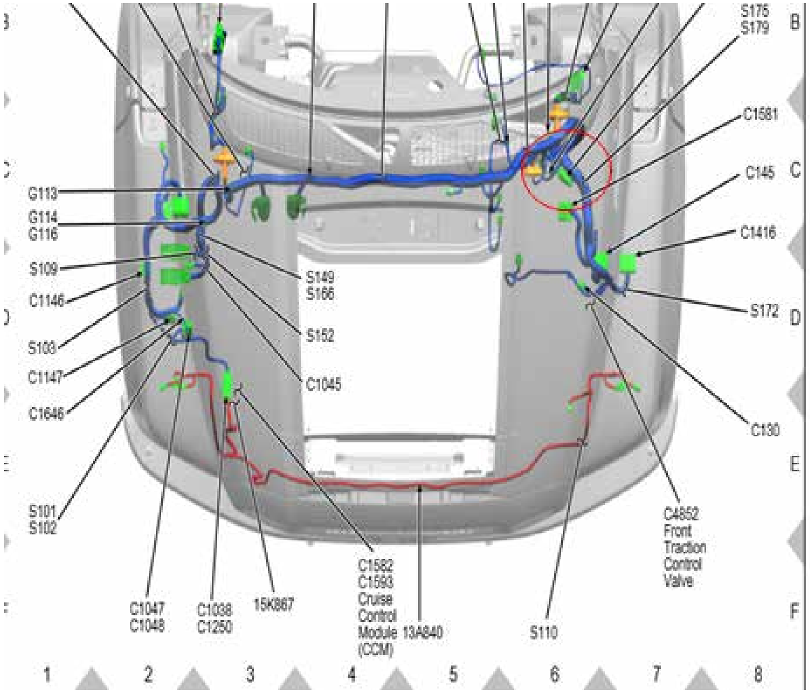
- NEVER use any sealer, especially silicone-based, on the PTO port gasket.

- TorqShift™ Automatic Transmission: On the 6.7L diesel engine, the PTO gear delivers up to 300ft-lbs of torque to the aftermarket PTO and 250ft-lbs of on the 7.3L Gasoline engine. The powertrain cooling system can manage the heat of 60 HP on the 6.7l diesel engine and 40 HP on the 7.3L gasoline engine during continuous operation. Higher horsepower can be delivered, but for shorter durations depending on the amount of power required.

- Some aftermarket PTO’s may not be capable of using the full available torque. Consult with the aftermarket PTO supplier to ensure the appropriate PTO selected for the application.

Customer Access Circuit / SEIC Wire Locations

SEIC circuits, Customer Access Signal Circuits.


S175
S179
B
C1581
C145
C
C1416
S172
D
C130
E
C4852
Front
Traction
Control
Valve
F
G113
G114
G116
S109
C1146
S103
C1147
C1646
S101
S102
S149
S166
S152
C1045
C1047
C1048
C1038
C1250
15K867
C1582
C1593
Cruise
Control
Module 13A840
(CCM)
S110
1
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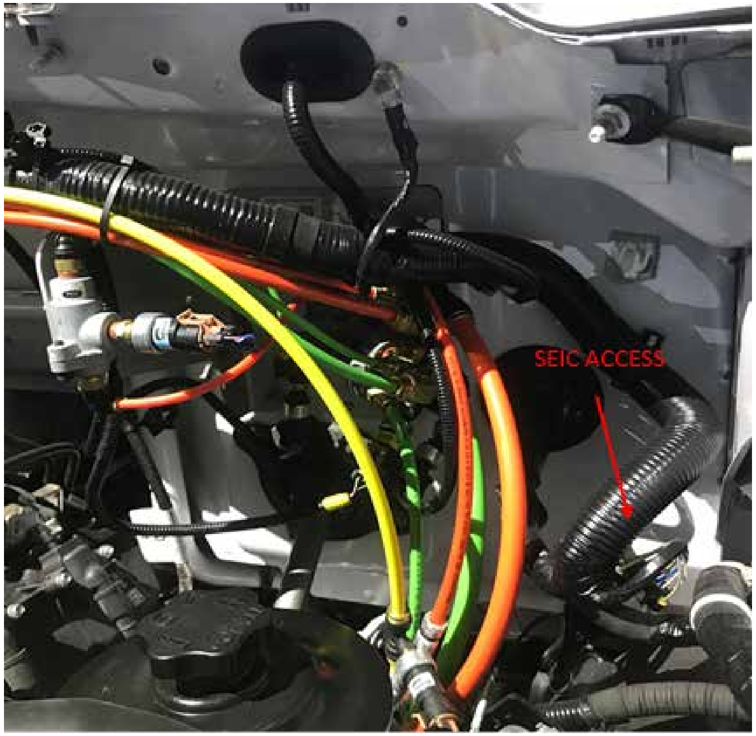

SEIC ACCESS

Customer Accessible Signal Circuit Description

F-650/750 7.3L Gasoline and 6.7L Diesel

CUSTOMER ACCESS SIGNAL CIRCUITS - Found: Blunt-cut & taped, in Customer access harnessunder driver's side dash.

Wire Color	Wire Tag	Circuit No.	Circuit Intent	Description	
Gray / Brown	TRO P	CET22	OUTPUT PARK-Only	6.7L Diesel - PCM Pin C1232T-45	7.3L Gasoline – PCM Pin C175B-59
				- An output from the PCM that indicates when the Transmission Range Sensor is indicating that the Transmission is in the Park Position. The Low Side driver (160mA max.) in the PCM will pull this output to ground when active (Transmission is in the PARK Position). To properly reference this output, the customer supplied external controller/device needs to pull this output up to VPWR with a 680 Ohm resistor. Thus when the output is active, the voltage at this output will be 0 volts. When this output is not active, the output will be pulled up to VPWR by the 680 Ohm pull up resistor.	
Diesel Green / White Gas Green/ Brown	TRO N	CET21	OUTPUT NEUTRAL-Only	6.7L Diesel - TCM Pin C1232T-60	7.3L Gasoline – PCM Pin C175B-18
				- An output from the PCM that indicates when the Transmission Range Sensor is indicating that the Transmission is in the Neutral Position. The Low Side driver (160mA max.) in the PCM will pull this output to ground when active (Transmission is in the Neutral Position). To properly reference this output, the customer supplied external controller/device needs to pull this output up to VPWR with a 680 Ohm resistor.Thus when the output is active, the voltage at this output will be 0 volts. When this output is not active, the output will be pulled up to VPWR by the 680 Ohm pull up resistor.	
Gas Violet / Red Diesel Violet / White	VS OUT	VMC05	OUTPUT Vehicle Speed	6.7L Diesel - PCM Pin C1232T-32	7.3L Gasoline – PCM Pin C175B-75
				- An output from the PCM that provides 8000 pulses per mile signal with a 50% duty cycle. The low side driver in the PCM will switch the output off and on (off will allow the output to be pulled up close to VPWR), (on will put the output to 0 volts).	
Blue	CTO	CE913	OUTPUT Engine Speed	6.7L Diesel - PCM Pin C1232T-2	7.3L Gasoline – PCM Pin C175B-30
				- An output from the PCM that indicates a Clean Tachometer Output to provide an indication of engine RPM. The low side driver in the PCM will switch the output off and on (off will allow the output to be pulled up close to VPWR), (on will put the output to 0 volts), at a Frequency = ((Engine RPM's * Number of cylinders) / 120), with a duty cycle of 50%. The customer-supplied external controller should have a high-impedance input such that it does not impact the PCM's ability to provide a Clean Tach Out signal.	
White / Violet	PARK BRAKE	CMC25	OUTPUT Park Brake	Hydraulic Brakes - BCM Pin C2280E-47	Air Brakes – GFM pin C2464B-9
				- Ground Output Signal wire - NOTE: The Body Control Module (BCM) park brake input also uses this signal. The BCM park brake input cannot source any current. The body builder must provide a high impedance circuit (such as a Field Effect Transistor) with a 20 kilo-ohm or larger resistor to prevent faulting the Body Control Module. See schematic in the Body Builder Layout Book.	

Battery Voltage Sources (VPWR)

F-650/750 7.3LGasoline and 6.7L Diesel

Wire Color	Wire Tag	Circuit No.	Circuit Intent	Description
Gray	VPWR3	CBK03	OUTPUT RUN / START	- Ignition Hot-in Run / Start - 10-amp fused (F34 in PDB) circuit, found in customer access circuit harness under driver's side dash.
Yellow	UPFIT RLY 1	CAC05	OUTPUT Upfitter Switch 1	40A fused output (16awg), found in customer access circuit harness under driver's side dash.
Green / Brown	UPFIT RLY 2	CAC06	OUTPUT Upfitter Switch 2	40A fused output (16awg), found in customer access circuit harness under driver's side dash.
Violet / Green	UPFIT RLY 3	CAC07	OUTPUT Upfitter Switch 3	20A fused output (20awg), found in customer access circuit harness under driver's side dash.
Brown	UPFIT RLY 4	CAC08	OUTPUT Upfitter Switch 4	20A fused output (20awg), found in customer access circuit harness under driver's side dash.

F650/750 SUPER DUTY

Stationary Elevated Idle Control for 6.7L Diesel,7.3L Gasoline PTO Mode Descriptions, Splitshaft PTO, and Battery Charge Protect

PTO Mode Specifications

Engine	Mode	Max. Load at Transmission PTO Gear	Minimum Engine RPM	Maximum Engine RPM
6.7L Diesel	Stationary	300ft-lbs	900	3000
	Mobile	200ft-lbs	750	3000
	Split-shaft	N/A	700	3000
7.3L Gasoline	Stationary	250ft-lbs	800	2400
	Mobile	125ft-lbs	750	6500

Operating Modes

Stationary Elevated Idle Control mode

- operates in Park at elevated engine speed. The maximum load at the transmission PTO gear are shown in the table below:

Engine	Max. Load at Transmission PTO Gear, Stationary
6.7L Diesel	300ft-lbs
7.3L Gasoline	250ft-lbs

- Intended to be commanded ONLY by applying battery voltage to certain customer-access blunt-cut wire circuits, and adding a target-speed resistor, and is only available when the vehicle road speed signal is zero

- Includes a circuit which changes from open-circuit to ground when enablers are met that may be used to turn on an indicator lamp while providing battery power to an aftermarket PTO clutch or solenoid

Engine speed ramp-rates are configurable, by means of an IDS tool, for all powertrains.
o Default ramp-rate for all powertrains is 200 RPM/second.
o Configurable ramp rates are as follows:
- Diesel: 100 – 800 RPM/sec (in 100 RPM/sec increments).
- Gas: 100 – 1000 RPM/sec (in 100 RPM/sec increments)

Typical SEIC Engagement Sequence for TorqShift™ PTO

1. 12V is applied to PTQ REQ1 circuit.
2. PCM looks for the following enabling conditions:
   - Parking brake applied.
   - Foot off of service brake
   - Vehicle in PARK (or NEUTRAL)
   - Foot off of accelerator pedal
   - Vehicle speed is 0 mph (stationary)
   - Engine at a stable base idle speed
   - Transmission Oil Temp above 20° F
   - 6.7L only - Engine Coolant Temperature (ECT) 20° F minimum
   - 7.3L only - Engine Coolant Temperature (ECT) 20° F minimum.
3. Command is sent to boost the transmission hydraulic line pressure to a minimum of 150 psi, which is used by the aftermarket PTO supplier to hold their PTO Clutch.Command is sent to increase engine speed to 900 rpm

4. The PTO RLY circuit changes from open-circuit to ground. If the up-fitter uses the circuit wiring offered in this bulletin then this will provide battery voltage to the aftermarket PTO solenoid to engage the PTO.

5. Engine RPM ramps to target speed determined by the resistor selection.

Mobile Mode

-operates in all gears and all vehicle speeds. The engine idle speed is elevated to 750 RPM when the Mobile Mode is initiated.

Engine RPM is controlled by the driver through the throttle pedal and is limited to upfitter selected peak engine speed -RPM Limiting (2018 model year and later 6.7L diesel vehicles only)-RPM limiting controls engine speed in Mobile Mode below a selectable maximum threshold. Maximum RPM is determined by the resistor installed between the PTO_REF and PTO RPM circuits.
See table for RPM / resistor values.

- Transmission behaviour changes in Mobile Mode due to upshifting performance; e.g., it is possible for a customer to reach max. rpm in a lower gear, and the transmission is unable to accelerate – or upshift – to the next gear.
- If this action is not desired, the operator can
  1. Ease up on the accelerator pedal and receive an upshift, or
  2. Put the transmission in manual mode and select the gears manually
- Selected target RPM has a margin of +/- 15% based on transient conditions (for example, descending a grade).
- Mobile PTO may overshoot selected the RPM by 100-200 RPM for drivability

The Maximum load allowable for mobile mode are shown in the table below.

Engine	Max. Load at Transmission PTO Gear, Mobiler Mode
6.7L Diesel	200ft-lbs
7.3L Gasoline	125ft-lbs

- If the PTO feature is used for extended periods of time without vehicle movement it is recommended to switch to Stationary Mode

Typical Mobile Mode Engagement Sequence

1. 12V applied to PTO REQ2 circuit

2. PCM looks for the following enabling conditions:
   - Transmission Oil Temp above 20° F
   - 6.7L only - Engine Coolant Temperature (ECT) 20° F minimum
   - 7.3L only - Engine Coolant Temperature (ECT) 20° F minimum

3. PCM looks for voltage on PTO RPM circuit

4. Command is sent to boost transmission hydraulic line pressure to a minimum of 150 psi, which is used by the aftermarket PTO supplier to hold their PTO Clutch

5. The PTO RLY circuit changes from open-circuit toground. If the up-fitter uses the circuit wiring offered in this bulletin then this will provide battery voltage to the aftermarket PTO solenoid to engage the PTO.

6. Engine idle increases to 750 RPM.

Split Shaft Mode (Diesel Only)

- To install Split-Shaft mode, wire according to the diagram. Select elevated idle speed by installing a resistor (which provides voltage to PTO RPM input) as indicated in the wiring diagram.Split-Shaft mode requires that supply voltage (nominal 12vdc) be applied to both the **PTO REQ1** and **PTO REQ2** circuits.

Split Shaft Engagement procedure:

1. Ensure the following engine is running and the engine coolant temp is above 20° F

2. Apply park brake

3. Disconnect vehicle drive train (transmission in NEUTRAL, 4x4 DISENGAGED) and engage PTO load

4. With foot off both the service brake and accelerator pedals, turn Split-Shaft PTO on, Engine speed will lift to approx 650 RPM standy-by speed.

5. While pressing the service brake, shift transmission into drive, Brake pedal must remain depressed for a minimum of 3 seconds after moving gear shift lever into drive position in order to enable Split-Shaft Mode

6. The system will raise transmission hydraulic line pressure, shift into 4th gear, and lock the converter (keep service brake depressed minimum of three seconds after transition into drive). Release service brake and engine speed will ramp up to target idle speed in a controlled manner.

If vehicle unexpectedly lurches or moves upon releasing service brake, immediately depress brake pedal and shift transmission into PARK or NEUTRAL to secure vehicle. Contact Upfitter immediately

Battery Charge Protect (BCP):

-When 12V is applied to the BCP SW circuit, the engine speed goes immediately to 600. From this state, the PCM uses battery voltage as well as ambient air temp., engine oil temperature information to raise engine speed higher to maintain battery charge. Maximum engine speed in BCP mode is 1200 rpm. Loss of an operating condition after BCP is engaged will require the BCP switch to be cycled before BCP will re-engage.

- BCP CANNOT BE ACTIVE WHEN SEIC OR PTO MODES ARE ACTIVE
- A Resistor must be installed between PTO REF and PTO RPM for both Diesel and Gasoline engines.

Typical Battery Charge Protect Mode Engagement Sequence:

1. 12V applied to BCP SW circuit
2. PCM looks for the following enabling conditions:
   - Parking brake applied.
   - Foot off of service brake
   - Vehicle in PARK (or NEURTRAL)
   - Foot off of accelerator pedal
   - Vehicle speed is 0 mph (stationary)
   - Engine at a stable base idle speed
   - Transmission Oil Temp above 20° F
   - 6.7L only - Engine Coolant Temperature (ECT) 20° F minimum
   - 7.3L only - Engine Coolant Temperature (ECT) 20° F minimum.
3. PCM looks for a valid voltage between 0.2 to 4.7 Volts on the PTO RPM circuit
4. Vehicle idle fluctuates slightly as PCM enters BCP mode
5. The BCP LP circuit changes from open-circuit to ground. This is intended to provide a ground path for a BCP indicator lamp

NOTE: BCP is a smart system.Engine idle will not increase unless the vehicle senses an increase in electrical demand. Under periods of low electrical demand, the operator may not notice any change in engine RPM.It is recommend that the modifier install an indicator lamp to alert the operator that BCP is properly engaged.

Additional notes:

Adaptive Cooling

This PCM strategy automatically restricts engine power when it senses an over-temperature condition, and may interrupt the SEIC-PTO operation. Typically, the over-temperature condition it reacts to will also show up on the temperature gage on the instrument panel. Elevated engine speed, typical of SEIC operation, may help avoid Adaptive Cooling occurrence due to the resultant additional engine and transmission coolant flow. However, depending on the auxiliary PTO power being demanded, 900 rpm may not be enough to prevent the power train from entering Adaptive Cooling mode, but 1500 rpm may.

Input Resistor

ALL modes (SEIC, PTO) require usage of an input resistor. The resistor value may be obtained in Tables A & B.

F650/750 SUPER DUTY

SEIC PTO/Mobile PTO/Split Shaft PTO

Gas And Diesel Resistor Chart (0.1 Volt_resistor_chart)

GAS AND DIESEL RESISTOR CHART	PTO_RPM Input Voltage	Resistor	GAS SEIC PTO Engine RPM	GAS Mobile PTO Engine RPM Speed Limit	GAS Mobile PTO min Engine base idle speed	Diesel SEIC PTO Engine RPM	Diesel Split Shaft PTO Engine RPM	Diesel Mobile PTO Engine RPM Speed Limit	Diesel Mobile PTO min Engine base idle speed
voltage out of range low	0.00	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	0.10	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	0.20	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
voltage dead band	0.30	73633	700	900	750	900	700	900	750
Usable voltage range	0.40	54050	700	900	750	900	700	900	750
	0.50	42300	743	1040	750	953	758	953	750
	0.60	34467	785	1180	750	1005	815	1005	750
	0.70	28871	828	1320	750	1058	873	1058	750
	0.80	24675	870	1460	750	1110	930	1110	750
	0.90	21411	913	1600	750	1163	988	1163	750
	1.00	18800	955	1740	750	1215	1045	1215	750
	1.10	16664	998	1880	750	1268	1103	1268	750
	1.20	14883	1040	2020	750	1320	1160	1320	750
	1.30	13377	1083	2160	750	1373	1218	1373	750
	1.40	12086	1125	2300	750	1425	1275	1425	750
	1.50	10967	1168	2440	750	1478	1333	1478	750
	1.60	9988	1210	2580	750	1530	1390	1530	750
	1.70	9124	1253	2720	750	1583	1448	1583	750
	1.80	8356	1295	2860	750	1635	1505	1635	750
	1.90	7668	1338	3000	750	1688	1563	1688	750
	2.00	7050	1380	3140	750	1740	1620	1740	750
	2.10	6490	1423	3280	750	1793	1678	1793	750
	2.20	5982	1465	3420	750	1845	1735	1845	750
	2.30	5517	1508	3560	750	1898	1793	1898	750
	2.40	5092	1550	3700	750	1950	1850	1950	750
	2.50	4700	1593	3840	750	2003	1908	2003	750
	2.60	4338	1635	3980	750	2055	1965	2055	750
	2.70	4004	1678	4120	750	2108	2023	2108	750
	2.80	3693	1720	4260	750	2160	2080	2160	750
	2.90	3403	1763	4400	750	2213	2138	2213	750
	3.00	3133	1805	4540	750	2265	2195	2265	750
	3.10	2881	1848	4680	750	2318	2253	2318	750
	3.20	2644	1890	4820	750	2370	2310	2370	750
	3.30	2421	1933	4960	750	2423	2368	2423	750
	3.40	2212	1975	5100	750	2475	2425	2475	750
	3.50	2014	2018	5240	750	2528	2483	2528	750
	3.60	1828	2060	5380	750	2580	2540	2580	750
	3.70	1651	2103	5520	750	2633	2598	2633	750
	3.80	1484	2145	5660	750	2685	2655	2685	750
	3.90	1326	2188	5800	750	2738	2713	2738	750
	4.00	1175	2230	5940	750	2790	2770	2790	750
	4.10	1032	2273	6080	750	2843	2828	2843	750
	4.20	895	2315	6220	750	2895	2885	2895	750
	4.30	765	2358	6360	750	2948	2943	2948	750
	4.40	641	2400	6500	750	3000	3000	3000	750
voltage dead band	4.50	522	2400	6500	750	3000	3000	10000	750
	4.60	409	2400	6500	750	3000	3000	10000	750
Voltage out of range high	4.70	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	4.80	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	4.90	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	5.00	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Gas And Diesel Resistor Chart (100 Rpm Resistor_chart)

6.7L Diesel Non-Split Shaft Stationary		
Engine Target	Resistor	Voltage
900	54050	0.40
1000	35098	0.59
1100	25391	0.78
1200	19491	0.97
1300	15525	1.16
1400	12677	1.35
1500	10531	1.54
1600	8858	1.73
1700	7515	1.92
1800	6415	2.11
1900	5496	2.30
2000	4718	2.50
2100	4050	2.69
2200	3471	2.88
2300	2963	3.07
2400	2515	3.26
2500	2116	3.45
2600	1759	3.64
2700	1438	3.83
2800	1147	4.02
2900	883	4.21
3000	641	4.40

7.3L GAS Non-Split Shaft Stationary		
Engine Target	Resistor	Voltage
700	54050	0.40
800	32291	0.64
900	22293	0.87
1000	16550	1.11
1100	12822	1.34
1200	10207	1.58
1300	8271	1.81
1400	6780	2.05
1500	5596	2.28
1600	4634	2.52
1700	3836	2.75
1800	3164	2.99
1900	2590	3.22
2000	2094	3.46
2100	1661	3.69
2200	1281	3.93
2300	943	4.16
2400	641	4.40

6.7L Diesel Split Shaft Stationary Elevated		
Engine Target	Resistor	Voltage
700	54050	0.40
800	36247	0.57
900	26724	0.75
1000	20795	0.92
1100	16748	1.10
1200	13810	1.27
1300	11580	1.44
1400	9830	1.62
1500	8419	1.79
1600	7258	1.97
1700	6286	2.14
1800	5460	2.31
1900	4749	2.49
2000	4132	2.66
2100	3590	2.83
2200	3111	3.01
2300	2684	3.18
2400	2301	3.36
2500	1956	3.53
2600	1644	3.70
2700	1359	3.88
2800	1099	4.05
2900	861	4.23
3000	641	4.40

6.7L Diesel Mobile PTO Engine Speed Limit		
Engine Target	Resistor	Voltage
900	54050	0.40
1000	35098	0.59
1100	25391	0.78
1200	19491	0.97
1300	15525	1.16
1400	12677	1.35
1500	10531	1.54
1600	8858	1.73
1700	7515	1.92
1800	6415	2.11
1900	5496	2.30
2000	4718	2.50
2100	4050	2.69
2200	3471	2.88
2300	2963	3.07
2400	2515	3.26
2500	2116	3.45
2600	1759	3.64
2700	1438	3.83
2800	1147	4.02
2900	883	4.21
3000	641	4.40

7.3L Gas Mobile PTO Engine Speed Limit		
Engine Target	Resistor	Voltage
900	54050	0.40
1000	45148	0.47
1100	38589	0.54
1200	33556	0.61
1300	29571	0.69
1400	26338	0.76
1500	23662	0.83
1600	21411	0.90
1700	19491	0.97
1800	17834	1.04
1900	16390	1.11
2000	15119	1.19
2100	13993	1.26
2200	12988	1.33
2300	12086	1.40
2400	11271	1.47
2500	10531	1.54
2600	9858	1.61
2700	9241	1.69
2800	8674	1.76
2900	8152	1.83
3000	7668	1.90
3100	7220	1.97
3200	6803	2.04
3300	6415	2.11
3400	6052	2.19
3500	5711	2.26
3600	5392	2.33
3700	5092	2.40
3800	4809	2.47
3900	4542	2.54
4000	4289	2.61
4100	4050	2.69
4200	3823	2.76
4300	3608	2.83
4400	3403	2.90
4500	3209	2.97
4600	3023	3.04
4700	2846	3.11
4800	2677	3.19
4900	2515	3.26
5000	2360	3.33
5100	2212	3.40
5200	2070	3.47
5300	1933	3.54
5400	1802	3.61
5500	1676	3.69
5600	1555	3.76
5700	1438	3.83
5800	1326	3.90
5900	1217	3.97
6000	1113	4.04
6100	1012	4.11
6200	914	4.19
6300	820	4.26
6400	729	4.33
6500	641	4.40

Circuit Descriptions for PTO Modes

All circuits lead back to pins on the PCM.

F-650/750 – 6.7l Diesel

Wire Color	Wire Tag	Circuit No.	Circuit Intent	Description

Yellow / Green	PTOREQ1	CE912	INPUT (VPWR)	**6.7L Diesel - PCM Pin C1232T-19**
				• Applying vehicle battery voltage to this wire initiates SEIC **Stationary Mode** process.
				  • Signals TorqShift™ transmission to enter SEIC Stationary Mode strategy.
				  • Verifies safety enablers.
				  • Turns off OBD and other emission-related monitoring.
				  • Elevates engine speed to target found at PTO-RPM circuit.
				  • Invokes the PTO relay circuit when safety enablers are met.
				  • Looks for the target engine speed requested at the PTO_RPM circuit using a resistor or POT.

Blue / Orange	PTOREQ2	CE933	INPUT (VPWR)	**6.7L Diesel - PCM Pin C1232T-18**
				• Applying vehicle battery voltage to this wire initiates **Mobile PTO Mode**.
				  • Signals TorqShift™ transmission to enter Mobile Mode strategy.
				  • Verifies safety enablers.
				  • Turns off OBD and other emission-related monitoring.
				  • Invokes the PTO relay circuit when safety enablers are met.
				  • Requires valid resistance on PTO_RPM input for system to function

Blue / White	PTORLY	CE326	OUTPUT	**6.7L Diesel - PCM Pin C1232T-30** • A low-side driver, changing from "open-circuit" to "ground" indicating that the engine is ready for the PTO operation to begin and that a PTO load may be applied. • Intended for powering a PTO indicator lamp, or turn on a relay coil (not to exceed 1 amp).LED lights require adding a resistor in series.
Green	PTORPM	CE914	INPUT (resistor)	**6.7L Diesel - PCM Pin C1232T-73** • Requires the addition of a resistor or potentiometer for any SEIC / PTO mode. • Resistor / potentiometer selection determines the fixed or variable engine target speed. • Combine in circuit with PTO-VREF and PTO-GND. • Speed range available: 900 rpm to 3000 rpm (700 min RPM for split shaft operation).
White / Brown	PTOREF	LE434	Reference Voltage	**6.7L Diesel - PCM Pin C1232T-83** • A 5-volt reference, buffered against shorts to ground or power, used to complete the resistor circuit for engine speed selection.
Gray / Red	PTORTN	RE327	PCM Ground	**6.7L Diesel - PCM Pin C1232T-88** • A ground reference, buffered, used to complete the resistor circuit for engine speed selection.
Violet / Brown	BCP SW	CE926	INPUT (VPWR)	**6.7L Diesel - PCM Pin C1232T-33** • Applying vehicle battery voltage to this wire begins BCP. • BCP regulates engine speed between 600 to1200 rpm to maintain required charge system voltage
Brown	BCP LP	CE140	OUTPUT	**6.7L Diesel - PCM Pin C1232T-75** • A low-side driver, changing from "open-circuit" to "ground" indicating that BCP is in effect. • Intended for powering an indicator lamp.

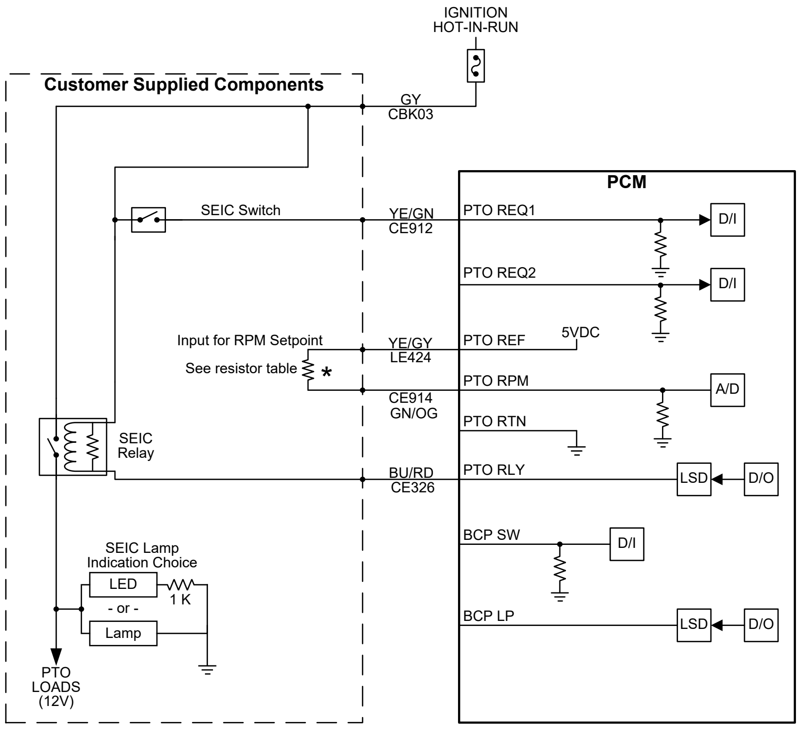
Circuit Descriptions for PTO Modes (Cont)

All circuits lead back to pins on the PCM.

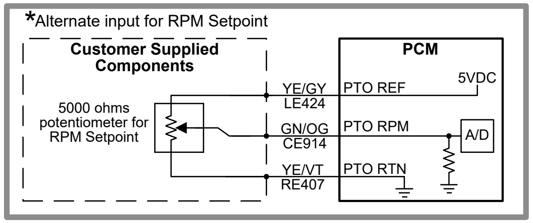
F-650/750 – 7.3L Gasoline Engine PCM

Wire Color	Wire Tag	Circuit No.	Circuit Intent	Description
Yellow / Green	PTOREQ1	CE912	INPUT (VPWR)	**PCM Pin C175B-21** • Applying vehicle battery voltage to this wire initiates SEIC **Stationary Mode** process. • Signals TorqShift™ transmission to enter SEIC Stationary Mode strategy. • Verifies safety enablers. • Turns off OBD and other emission-related monitoring. • Elevates engine speed to target found at PTO-RPM circuit. • Invokes the PTO relay circuit when safety enablers are met. • Looks for the target engine speed requested at the PTO_RPM circuit using a resistor or POT
Blue / Orn	PTOREQ2	CE933	INPUT (VPWR)	**PCM Pin C175B-20** • Applying vehicle battery voltage to this wire initiates **Mobile PTO Mode**. • Signals TorqShift™ transmission to enter Mobile mode strategy. • Verifies safety enablers. • Turns off OBD and other emission-related monitoring. • Invokes the PTO relay circuit when safety enablers are met. • Requires valid resistance on PTO_RPM input for system to function
Blue / Red	PTORLY	CE326	OUTPUT	**PCM Pin C175B-45** • A low-side driver, changing from "open-circuit" to "ground" indicating that the engine is ready for PTO operation to begin and that a PTO load may be applied. • Intended for powering a PTO indicator lamp, or turn on a relay coil (not to exceed 1 amp).LED lights require adding a resistor in series.
Green / Orange	PTORPM	CE914	INPUT (resistor)	**PCM Pin C175B-25** • Requires the addition of a resistor or potentiometer for any SEIC / PTO mode. • Resistor / potentiometer selection determines the fixed or variable engine target speed. • Combine in circuit with PTO_VREF (+5VDC). • Speed range available: 910 rpm to 2400 rpm
Yellow / Green	PTO VREF	LE424	Reference Voltage	**PCM Pin C175B-82** • A +5-volt reference, buffered against shorts to ground or power, used to complete the resistor circuit for engine speed selection.
Yellow / Violet	SIGRTN_C	RE407	PCM Ground	**PCM Pin C175B-28** • A ground reference, buffered, used to complete the resistor circuit for engine speed selection.
Violet / Brown	BCP SW	CE926	INPUT (VPWR)	**PCM Pin C175T-25 (trans PCM conn)** • Applying vehicle battery voltage to this wire begins BCP. • BCP regulates engine speed between 600 to1200 rpm to maintain required charge system voltage
Brown	BCPIL	CE140	OUTPUT	**PCM Pin C175B-64** • A low-side driver, changing from "open-circuit" to "ground" indicating that BCP is in effect. • Intended for powering an LED lamp (40mA max.).

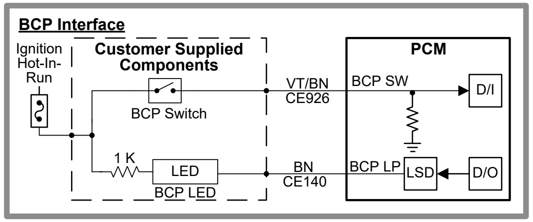
SEIC and BCP Interface 2021 F-650/750 7.3L Gasoline


IGNITION
HOT-IN-RUN
Customer Supplied Components
GY
CBK03
PCM
SEIC Switch
YE/GN
CE912
PTO REQ1
D/I
PTO REQ2
D/I
Input for RPM Setpoint
See resistor table
*
YE/GY
LE424
PTO REF
5VDC
CE914
GN/OG
PTO RPM
A/D
PTO RTN
SEIC
Relay
BU/RD
CE326
PTO RLY
LSD
D/O
BCP SW
D/I
SEIC Lamp
Indication Choice
LED
1 K
- or -
Lamp
BCP LP
LSD
D/O
PTO
LOADS
(12V)

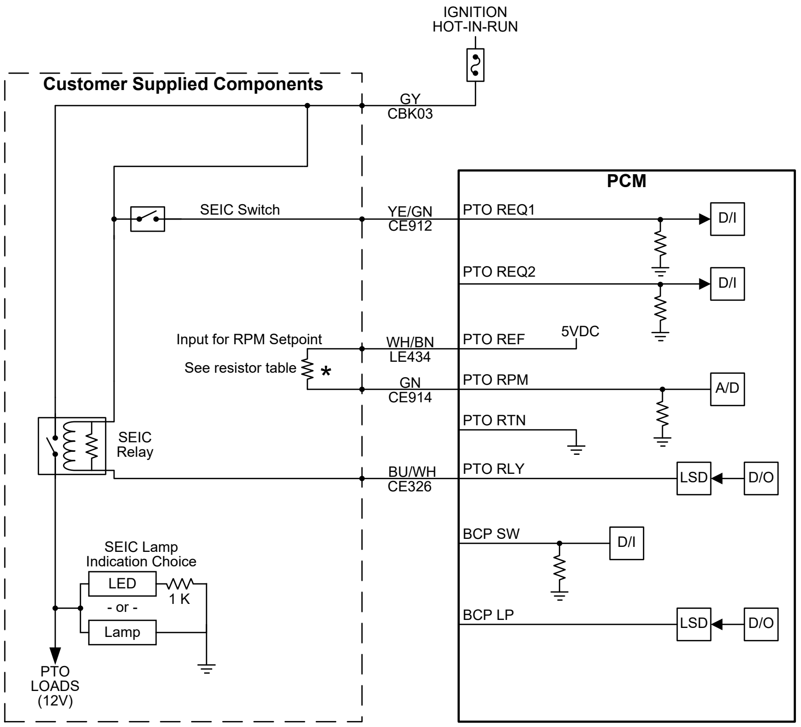
*Alternate input for RPM Setpoint


Customer Supplied
Components
PCM
5000 ohms
potentiometer for
RPM Setpoint
YE/GY
LE424
PTO REF
5VDC
GN/OG
CE914
PTO RPM
A/D
YE/VT
RE407
PTO RTN

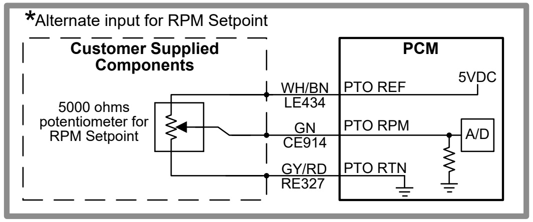
BCP Interface


Ignition
Hot-In-
Run
Customer Supplied
Components
PCM
BCP Switch
VT/BN
CE926
BCP SW
D/I
1 K
LED
BCP LED
BN
CE140
BCP LP
LSD
D/O

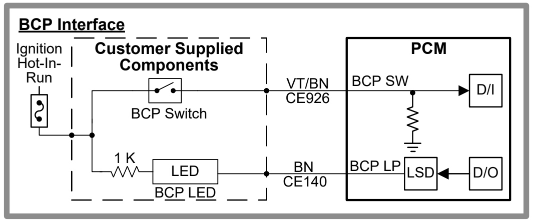
SEIC and BCP Interface 2021 F-650/750 6.7L


IGNITION
HOT-IN-RUN
Customer Supplied Components
GY
CBK03
PCM
SEIC Switch
YE/GN
CE912
PTO REQ1
D/I
PTO REQ2
D/I
Input for RPM Setpoint
See resistor table
*
WH/BN
LE434
PTO REF
5VDC
GN
CE914
PTO RPM
A/D
PTO RTN
SEIC
Relay
BU/WH
CE326
PTO RLY
LSD
D/O
BCP SW
D/I
SEIC Lamp
Indication Choice
LED
1 K
- or -
Lamp
BCP LP
LSD
D/O
PTO
LOADS
(12V)

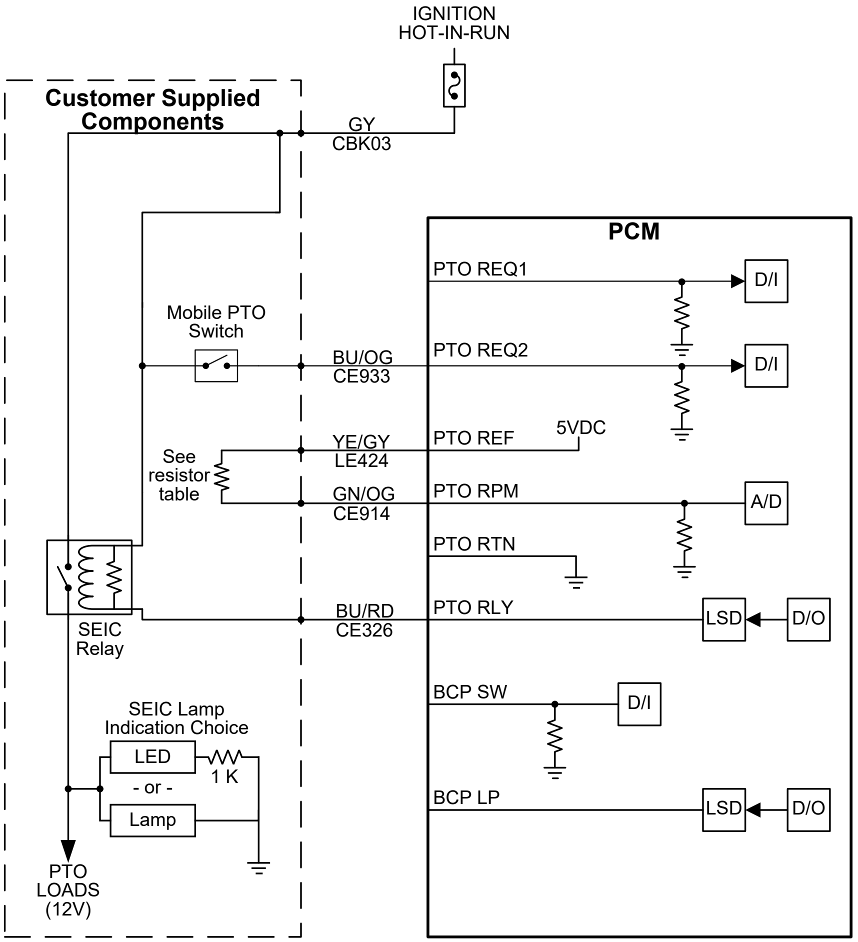
*Alternate input for RPM Setpoint


Customer Supplied
Components
PCM
5000 ohms
potentiometer for
RPM Setpoint
WH/BN
LE434
PTO REF
5VDC
GN
CE914
PTO RPM
A/D
GY/RD
RE327
PTO RTN

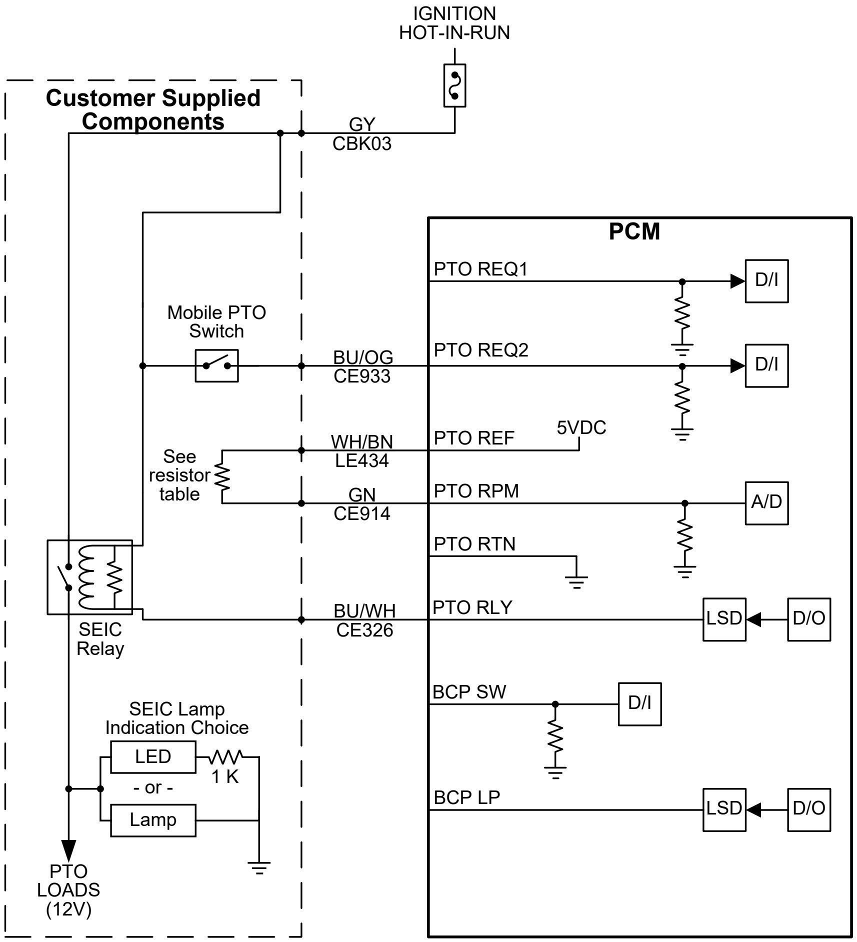
BCP Interface


Ignition
Hot-In-
Run
Customer Supplied
Components
PCM
BCP Switch
VT/BN
CE926
BCP SW
D/I
1 K
LED
BCP LED
BN
CE140
BCP LP
LSD
D/O

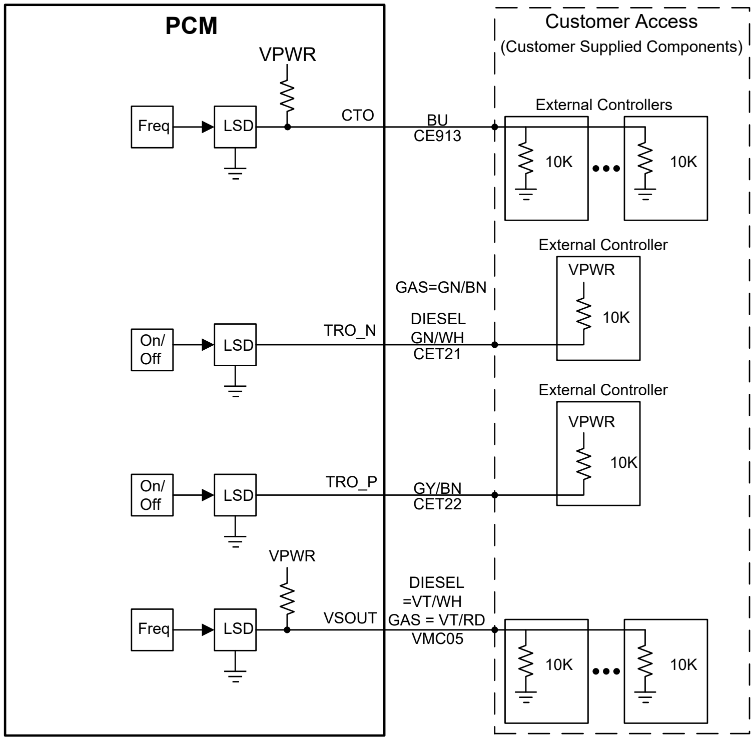
SEIC Interface
2021 F-650/750 7.3L Gasoline
Mobile Mode


IGNITION
HOT-IN-RUN
Customer Supplied Components
GY
CBK03
PCM
PTO REQ1
D/I
Mobile PTO Switch
BU/OG
CE933
PTO REQ2
D/I
See resistor table
YE/GY
LE424
PTO REF
5VDC
GN/OG
CE914
PTO RPM
A/D
PTO RTN
SEIC Relay
BU/RD
CE326
PTO RLY
LSD
D/O
BCP SW
D/I
SEIC Lamp Indication Choice
LED
1 K
- or -
Lamp
BCP LP
LSD
D/O
PTO LOADS (12V)

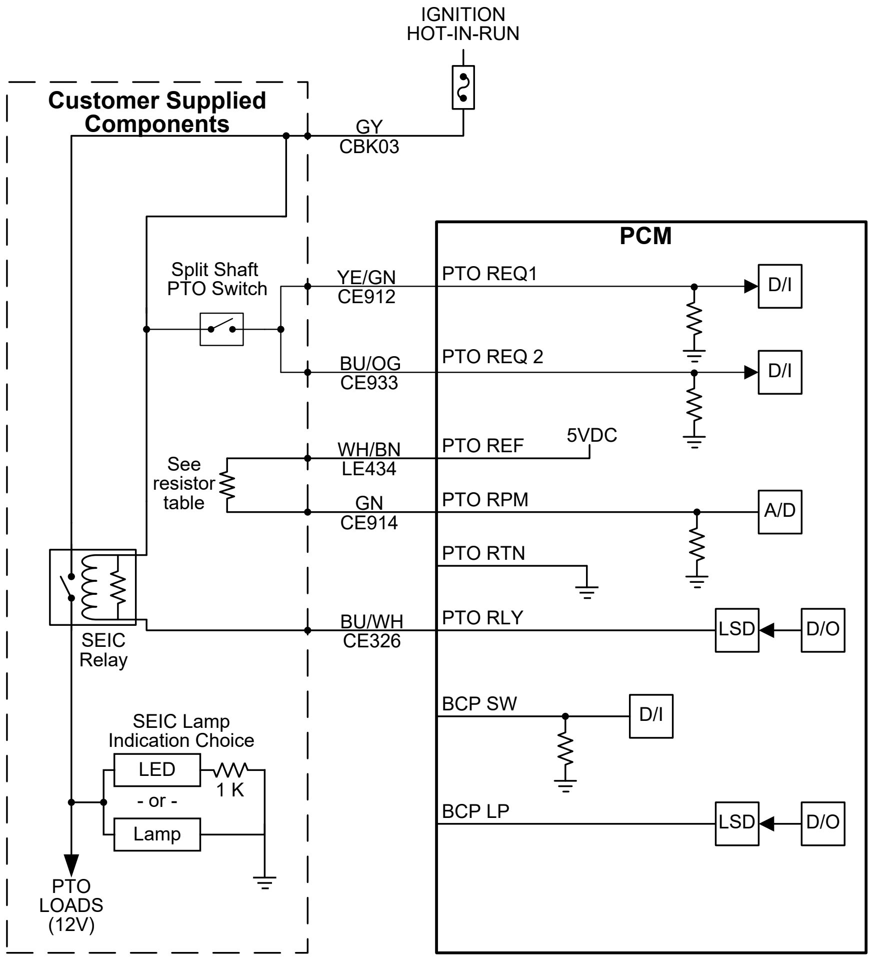
SEIC Interface
2021 F-650/750 6.7L Diesel
Mobile Mode


IGNITION
HOT-IN-RUN
Customer Supplied Components
GY
CBK03
PCM
PTO REQ1
D/I
Mobile PTO Switch
BU/OG
CE933
PTO REQ2
D/I
See resistor table
WH/BN
LE434
PTO REF
5VDC
GN
CE914
PTO RPM
A/D
PTO RTN
SEIC Relay
BU/WH
CE326
PTO RLY
LSD
D/O
BCP SW
D/I
SEIC Lamp Indication Choice
LED
1 K
- or -
Lamp
BCP LP
LSD
D/O
PTO LOADS (12V)

Customer Access
F-650/750
6.7L Diesel / 7.3L Gasoline


PCM
VPWR
Freq
LSD
CTO
BU
CE913
Customer Access
(Customer Supplied Components)
External Controllers
10K
10K
External Controller
VPWR
10K
GAS=GN/BN
DIESEL
GN/WH
CET21
TRO_N
On/
Off
LSD
External Controller
VPWR
10K
TRO_P
GY/BN
CET22
On/
Off
LSD
VPWR
Freq
LSD
VSOUT
DIESEL
=VT/WH
GAS = VT/RD
VMC05
10K
10K

SEIC Interface
F-650/750 6.7L Diesel
Split Shaft Mode


IGNITION
HOT-IN-RUN
Customer Supplied
Components
GY
CBK03
Split Shaft
PTO Switch
YE/GN
CE912
BU/OG
CE933
PCM
PTO REQ1
D/I
PTO REQ 2
D/I
See
resistor
table
WH/BN
LE434
PTO REF
5VDC
GN
CE914
PTO RPM
A/D
PTO RTN
SEIC
Relay
BU/WH
CE326
PTO RLY
LSD
D/O
BCP SW
D/I
SEIC Lamp
Indication Choice
LED
1 K
- or -
Lamp
BCP LP
LSD
D/O
PTO
LOADS
(12V)

6.7L Diesel and 7.3L Gasoline SEIC /Mobile Mode/SplitShaft/ BCP

Vehicle Conditions to Enable SEIC (all are required)	Vehicle Conditions that Disable SEIC (any one required - See Note-1)	SEIC	Split Shaft (Diesel only)	Mobile Mode	BCP
Parking brake applied.	Parking brake disengaged.	Yes	Yes	No	Yes
Foot off of service brake	Depressing service brake	Yes	See note - 4	No	Yes
Vehicle in PARK (or NEUTRAL)	Vehicle take out of PARK (or NEUTRAL)	Yes	See note - 4	No	Yes
Foot off of accelerator pedal	Accelerator pedal depressed	Yes	Yes	No	Yes
Vehicle speed is 0 mph (stationary)	Vehicle speed is not 0 mph (stationary)	Yes	Yes	No	Yes
Engine at a stable base idle speed		Yes	Yes	No	Yes
Transmission Oil Temp above 20°F	Transmission Oil Temperature (TOT) exceeds 240°F.	Yes	Yes	Yes	Yes
Engine Coolant Temperature (ECT) 20° F minimum (6.7L)	Engine Coolant Temperature (ECT) exceeds 230° F	Yes	Yes	Yes	No
Engine Coolant Temperature (ECT) 20 degree F minimum. (7.3L)	Engine Coolant Temperature Limit (ECT) 230 degree F maximum	Yes	N/A	Yes	Yes
	Catalyst Temperature Limit	Yes	Yes	Yes	Yes

Note 1: A "change-of-state" at the "PTO REQ1" input (for Stationary Elevated Idle Control non-Split Shaft), or for both "PTO REQ1 and PTO REQ2" inputs (for Stationary Elevated Idle Control Split Shaft) is required to re-invoke Stationary Elevated Idle Control. When a disable is seen by the PCM, the Stationary Elevated Idle Control function is de-activated, the "PTO RELAY" output circuit changes from a "ground-source" to "open-circuit", and engine speed returns to base idle. To re-activate Stationary Elevated Idle Control, the operator must open the PTO Switch to the "PTO REQ1" and "PTO REQ2" inputs, then close the PTO Switch again to the "PTO REQ1" or "PTO REQ1 and PTO REQ2" inputs.

Note 2: A "change-of-state" at the "PTO REQ2" input is required to re-invoke Mobile PTO. When a disable is seen by the PCM, the Mobile PTO function is de-activated, the "PTO RELAY" output circuit changes from a "ground-source" to "open-circuit", and engine speed returns to base idle. To re-activate Mobile PTO, the operator must open the PTO Switch to the "PTO REQ2" input, then close the PTO Switch again to the "PTO REQ2" input.

Note 3: A "change-of-state" at the "BCP SW" input is required to re-invoke Battery Charge Protect. When a disable is seen by the PCM, the Battery Charge Protect function is de-activated, the "BCP LP" output circuit changes from a "ground-source" to "open-circuit", and engine speed returns to base idle. To re-activate Battery Charge Protect, the operator must open the Battery Charge Protect Switch to the "BCP SW" input, then close the Battery Charge Protect Switch again to the "BCP SW" input.

Note 4: See Split-Shaft Mode Description

SEIC / PTO – General System Behavior

- To guarantee full advertised torque capability at the automatic transmission PTO gear and through the aftermarket PTO clutch, the hydraulic line pressure serving the aftermarket PTO clutch must be elevated. Applying battery voltage to the PTO circuit is the signal to the transmission to enter SEIC strategy and these important functions. This applies to both stationary and mobile PTO operations.

- **If an SEIC disabler occurs in any mode:**
  - **o ALL engines will require a "change-of-state", meaning the operator is required to turn off voltage to the "PTO-Request" circuit, and back on again to re-invoke SEIC and PTO operation.**

- If the Transmission Oil Temperature (TOT) sensor reaches 240°F, the PTO system may disengage, preventing torque from being delivered to the aftermarket transmission PTO.

- SEIC/PTO strategy function in the PCM is not affected by the loss of vehicle battery electrical power.

Engine speed ramp-rates are configurable, by means of an IDS tool, for all powertrains.
o Default ramp-rate for allpowertrains is 200 RPM/second.
o Configurable ramp rates are as follows:
• Diesel: 100 – 800 RPM/sec (in 100 RPM/sec increments).
• Gas: 100 – 1000 RPM/sec (in 100 RPM/sec increments)

o The SEIC system offers buffered PCM voltage and ground circuits to complete the resistor circuits for engine speed.

o If there is a high electrical demand on the chassis battery, such as from aftermarket inverters or generators, etc., the actual elevated idle engine speed may vary with that demand for any given resistance in the SEIC circuit.

APPENDIX

Vocabulary / Definitions

PTO Applications: Includes all forms of mechanical power, using the vehicle powertrain as the source, including transmission side-mounted PTO, split-shaft PTO, crankshaft PTO, and FEAD-mounted clutch-pumps, air compressors, and generators.
Clutch-Pump: A type of PTO that is driven by the vehicle engine crankshaft through the FEAD pulley system.
PCM: Powertrain Control Module
FEAD: Front End Accessory Drive (belt and pulley drive system)
SEIC: Stationary Elevated Idle Control
VSO, VSOUT: Vehicle Speed Out – see Customer Accessible Signal Description
TPO: Throttle Position Out. Direct customer access not provided.
ETC: Engine Coolant Temperature
CTO: Clean Tach Out - Customer Accessible Signal Description
VPWR: Vehicle Power Battery Voltage.
BCP_IL / BCP_SW: Battery Charge Protection Illumination Lamp / Battery Charge Protection Switch
Intermittent Duty Usage: 5 minutes out of a 15 minute period or less of continuous operation.
Continuous Duty Usage: Greater than 5 minutes out of a 15 minute period of continuous operation.
Change-of-State: Part of the SEIC strategy. If any condition is met that disables SEIC, the operator is required to turn the PTO switch OFF and back ON again before SEIC will allow elevated idle to return.
TRO_N, TRO_P: Transmission Range Output, indicating NEUTRAL ONLY, or PARK-ONLY
BCM: Body Control Module, located at lower passenger-side of instrument panel

SEIC / PTO – General System Behavior (cont.)

- **Correlation between engine speed and resistor values:**

o Both the 6.7L Diesel and 7.3L Gasoline applications uses a 5 volt reference signal and ground for the PTO_RPM input circuit.

o Normal base engine calibration allows approximately +/-50 rpm fluctuation. If any factory vehicle accessories are used during SEIC, e.g. a/c, defroster, etc., then that fluctuation may increase to approximately +/-100 rpm or more.

o The sudden loss of aftermarket PTO hydraulic pressure during SEIC/PTO operation, like a ruptured hose, may send SEIC engine speed to near 3000 rpm. It is recommended that a hydraulic pressure switch linked to SEIC/PTO be added to disable SEIC/PTO when a hose ruptures.

o Because of a service brake circuit characteristic at engine-start, invoking SEIC may cause the diagnostic error code FFG_BOO to get flagged (recorded in the PCM). To avoid this, simply tap the service brake pedal sometime after engine-start and prior to invoking SEIC. Once the code is set, SEIC may not be available until it is erased.

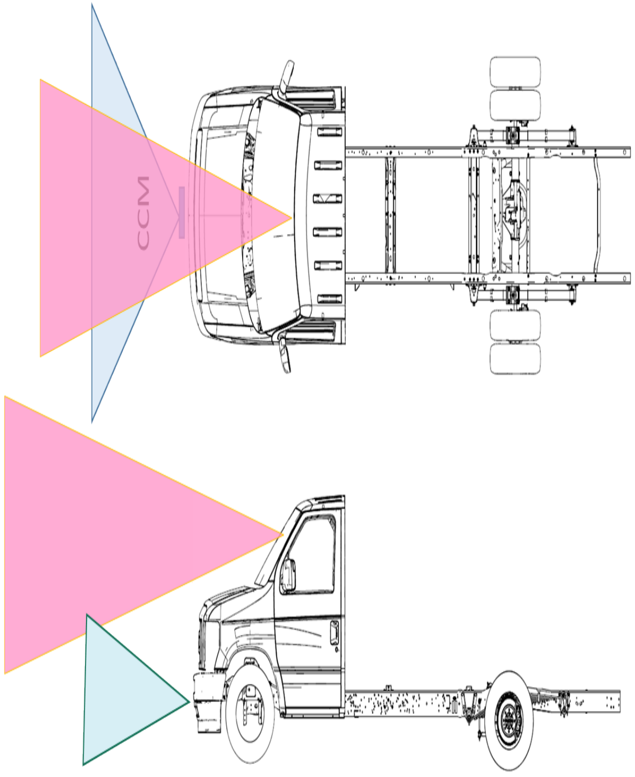
F650/750 SUPER DUTY
ADAS Field of View

- NOT RECOMMEND RELOCATING CAMERA OR RADAR
- ADAS HARDWARE CANNOT BE ADDED TO VEHICLE POST PRODUCTION.
- VERIFY LOCATION WHEN USING AFTERMARKET HOOD MOUNTED MIRRORS WHICH COULD POSSIBLY INTERFERE WITH CAMERA "FIELD OF VIEW"
- NOT RECOMMEND EQUIPPING VEHICLES WITH WINCH SYSTEMS, CONES, CABLES, LICENSE PLATES (CENTER) WHICH COULD POSSIBLY OBSTRUCT/INTERFERE WITH RADAR AND CAMERA "FIELD OF VIEW"
- NOT RECOMMEND APPLYING PAINT OR DECALS TO RADAR OR COVER WHICH COULD POSSIBLY OBSTRUCT/INTERFERE RADAR FIELD OF VIEW
- NOT RECOMMEND APPLYING DECALS OR OBJECTS TO THE FRONT OF WINDSHIELD WHICH COULD POSSIBLY OBSTRUCT/INTERFERE CAMERA "FIELD OF VIEW." OVER ROOF SYSTEMS THAT EXTEND FORWARD OF WINDSHIELD ENSURE THAT IT DOES NOT INTERFERE WITH CAMERA "FIELD OF VIEW".
- NOT RECOMMEND USING AFTERMARKET SUSPENSION COMPONENTS (E.G. ADDING AIR RIDE, HELPER SPRINGS, LIFT KITS, ETC.) WHICH COULD POSSIBLY OBSTRUCT/INTERFERE RADAR AND CAMERA FIELD OF VIEW ZONES
- NOT RECOMMEND USING FRONT BUMPER SYSTEM TO PUSH OTHER OBJECTS/VEHICLES THIS IS TO PREVENT ANY DAMAGE OR MISALIGNMENT TO RADAR AND COVER.
- NOT RECOMMEND MODIFYING OR REPLACING FACTORY EQUIPPED BUMPER WITH AFTERMARKET SOURCED BUMPERS WHICH MAY INTERFERE WITH RADAR "FIELD OF VIEW".
- IF THE CAMERA OR RADAR IS BLOCKED DUE TO ACCUMULATION OF DIRT, ICE, OR SNOW IN "FIELD OF VIEW" - VEHICLE WILL DISPLAY BLOCKAGE MESSAGE IN CLUSTER. ONCE BLOCKAGE IS REMOVED, BLOCKAGE MESSAGE WILL STOP BEING DISPLAYED.
- SNOW PLOW EQUIPPED VEHICLES WILL HAVE A FEATURE IN CLUSTER TO TURN OFF ADAS.

INSTALLED EQUIPMENT SHOULD NOT INFRINGE ON THE RADAR AND CAMERA VIEW ZONES. THE FOLLOWING 3D CAD FILES ARE AVAILABLE BY REQUEST AT FORDBBAS.COM

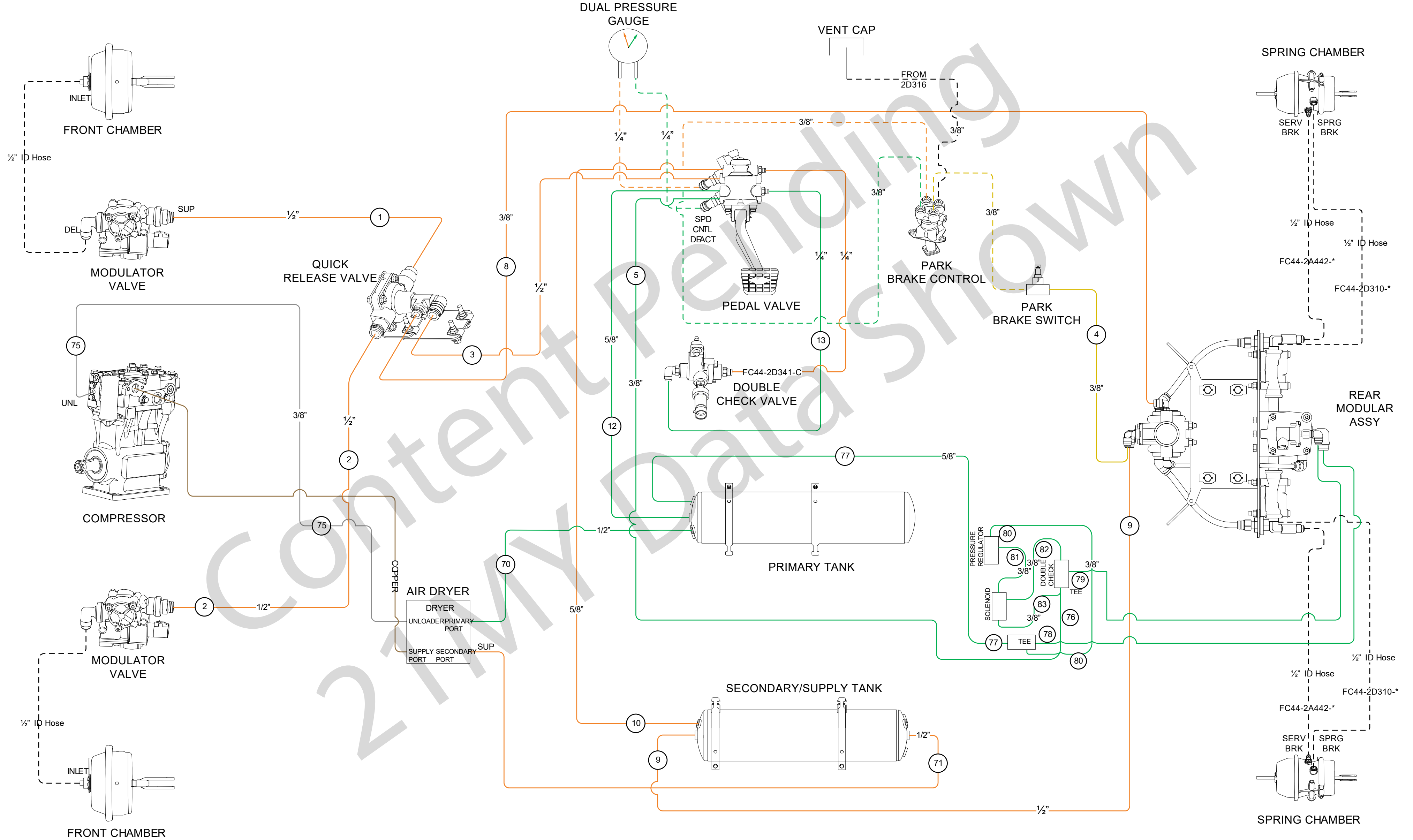
Radar FOV: FNA6220098
Camera FOV: FNA6352215

F650/750
ADAS FIELD OF VIEW



LOCATION OF RADAR AND CAMERA ON THE E-SERIES ARE FIXED.
PACKAGE INFORMATION IS FOR GENERAL REFERENCE.
RADAR SHOULD NOT BE MOVED OR ADJUSTED FROM "AS BUILT" LOCATION AND ALIGNMENT, UNLESS THE ATTITUDE OR RIDE HEIGHT IS SIGNIFICANTLY ALTERED.
THE INTERMEDIATE / FINAL STAGE MANUFACTURER IS RESPONSIBLE FOR VERIFYING THAT THE LANE KEEPING SYSTEM CAMERA SENSOR IS PROPERLY CALIBRATED WITHIN FORD SPECIFICATIONS ONCE VEHICLES ARE COMPLETED.
RADAR COVER CANNOT BE PAINTED OR REPLACED WITH AFTERMARKET COMPONENT.

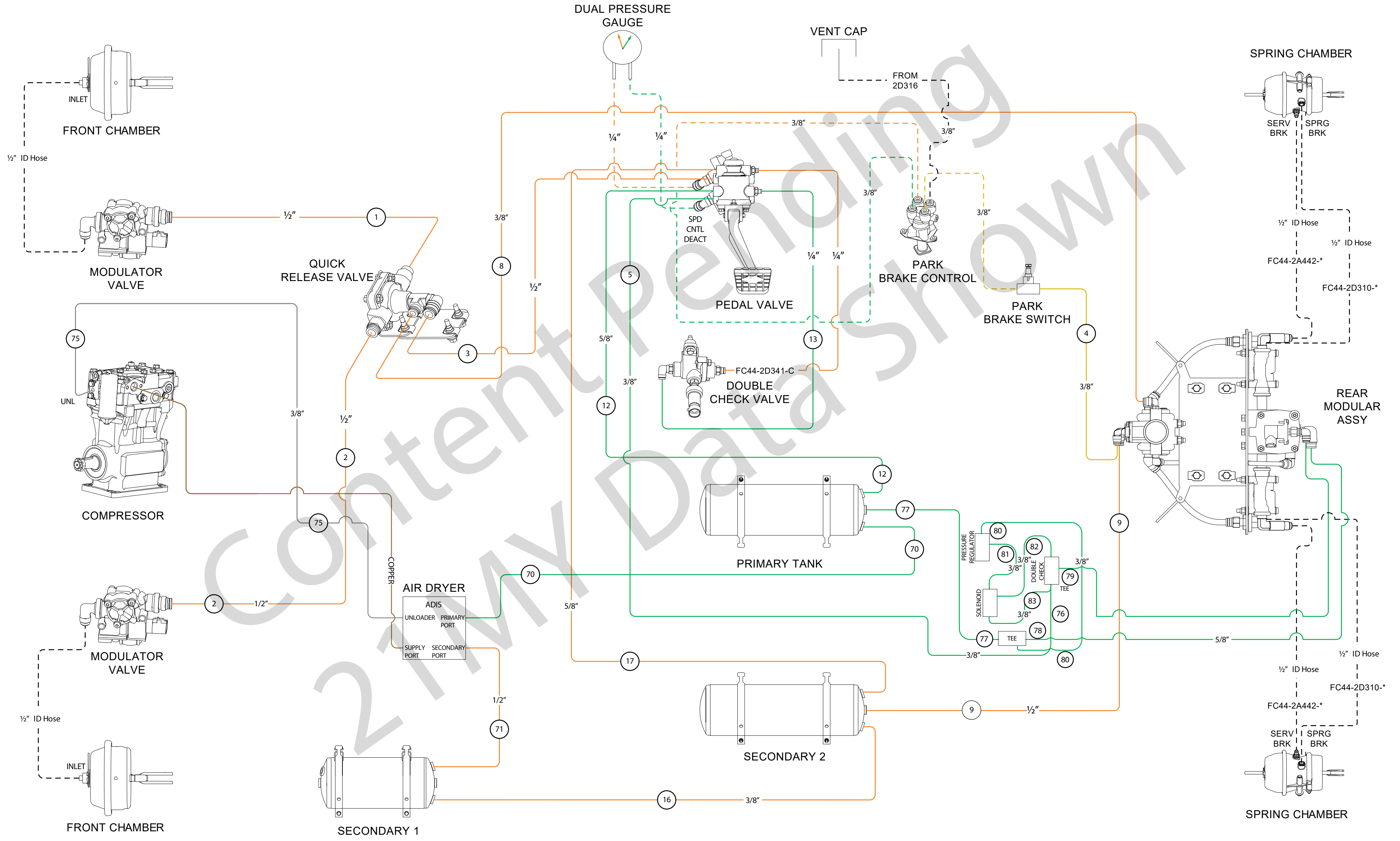
F650/750 SUPER DUTY
STRAIGHT TRUCK AIR BRAKE SCHEMATIC
REGULAR CAB W/ AIR DRYER


DUAL PRESSURE GAUGE
VENT CAP
FROM 2D316
SPRING CHAMBER
SERV BRK
SPRG BRK
INLET
FRONT CHAMBER
½" ID Hose
3/8"
¼"
¼"
SUP
DEL
½"
1
MODULATOR VALVE
QUICK RELEASE VALVE
8
½"
SPD CNTL DEACT
5
PEDAL VALVE
¼"
¼"
3/8"
PARK BRAKE CONTROL
3/8"
PARK BRAKE SWITCH
½" ID Hose
½" ID Hose
FC44-2A442-*
FC44-2D310-*
75
3
5/8"
13
4
FC44-2D341-C
DOUBLE CHECK VALVE
3/8"
3/8"
UNL
3/8"
½"
12
REAR MODULAR ASSY
2
COMPRESSOR
77
5/8"
75
PRIMARY TANK
9
1/2"
70
80
PRESSURE REGULATOR
81
82
3/8"
3/8"
DOUBLE CHECK
79
TEE
3/8"
COPPER
AIR DRYER
DRYER
UNLOADER
PRIMARY PORT
SUPPLY PORT
SECONDARY PORT
SUP
2
1/2"
5/8"
SOLENOID
83
3/8"
76
77
TEE
78
80
MODULATOR VALVE
½" ID Hose
½" ID Hose
FC44-2D310-*
FC44-2A442-*
SECONDARY/SUPPLY TANK
10
1/2"
9
71
½" ID Hose
INLET
FRONT CHAMBER
SERV BRK
SPRG BRK
½"
SPRING CHAMBER

Content Pending 21MY Data Shown

NOTES — [ ] DIMENSIONS ARE INCHES.

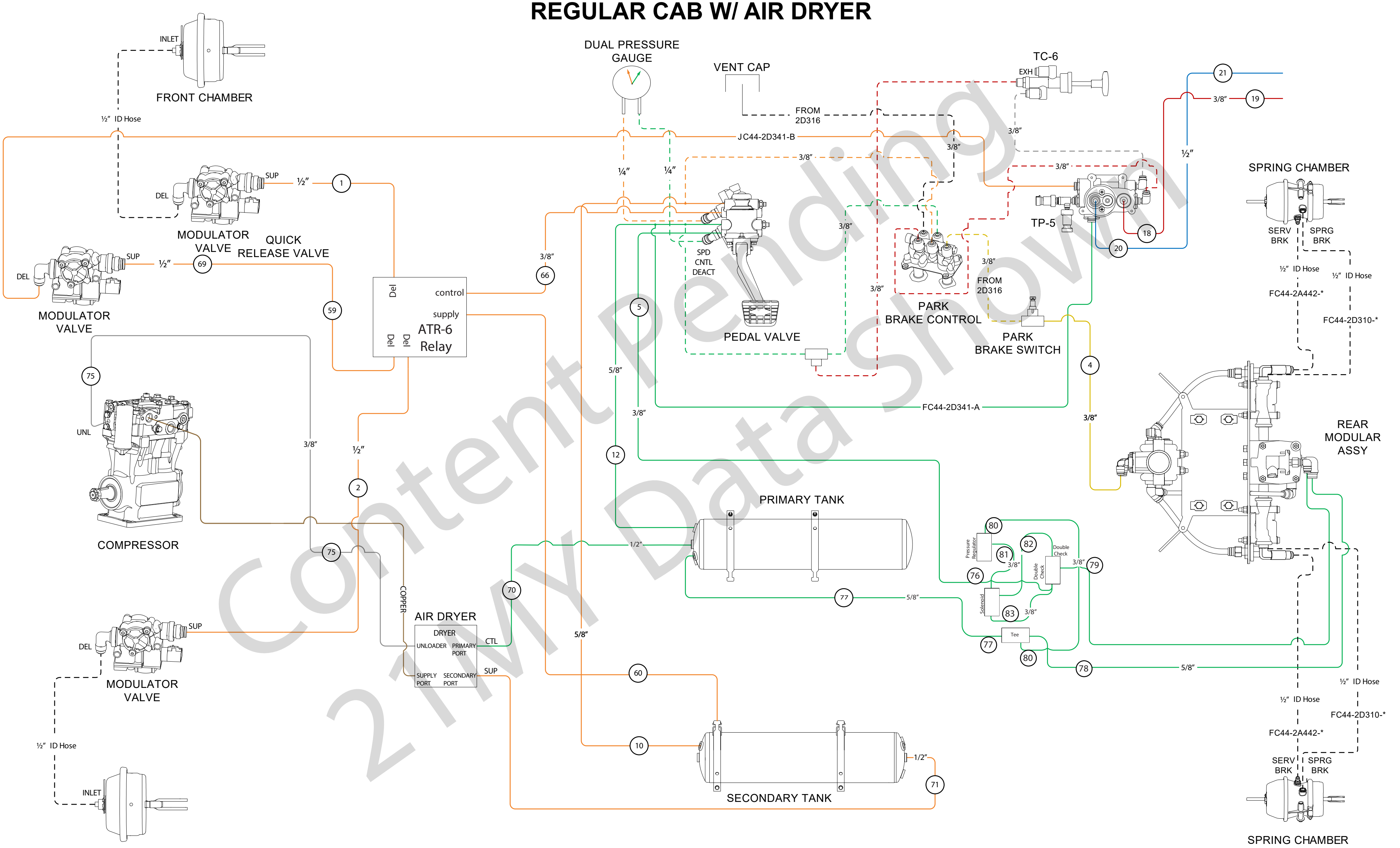
F650/750 SUPER DUTY
STRAIGHT TRUCK AIR BRAKE SCHEMATIC
SUPER & CREW CAB W/ AIR DRYER


DUAL PRESSURE GAUGE
VENT CAP
FROM 2D316
SPRING CHAMBER
SERV BRK
SPRG BRK
INLET
FRONT CHAMBER
½″ ID Hose
½″
1
MODULATOR VALVE
QUICK RELEASE VALVE
3/8″
¼″
¼″
3/8″
3/8″
8
½″
SPD CNTL DEACT
PEDAL VALVE
3/8″
3/8″
PARK BRAKE CONTROL
½″ ID Hose
½″ ID Hose
FC44-2A442-*
FC44-2D310-*
PARK BRAKE SWITCH
¼″
¼″
5
13
4
3
5/8″
3/8″
FC44-2D341-C
DOUBLE CHECK VALVE
12
3/8″
75
UNL
COMPRESSOR
3/8″
½″
2
REAR MODULAR ASSY
12
77
PRIMARY TANK
70
75
COPPER
70
AIR DRYER
ADIS
UNLOADER
PRIMARY PORT
SUPPLY PORT
SECONDARY PORT
5/8″
9
80
PRESSURE REGULATOR
81
82
3/8″
3/8″
DOUBLE CHECK
3/8″
79
TEE
SOLENOID
83
3/8″
76
77
TEE
78
3/8″
80
5/8″
2
1/2″
MODULATOR VALVE
½″ ID Hose
17
½″ ID Hose
½″ ID Hose
FC44-2D310-*
FC44-2A442-*
1/2″
71
9
½″
SECONDARY 2
SERV BRK
SPRG BRK
INLET
FRONT CHAMBER
SPRING CHAMBER
16
3/8″
SECONDARY 1

Content Pending
21MY Data Shown

NOTES — [ ] DIMENSIONS ARE INCHES.

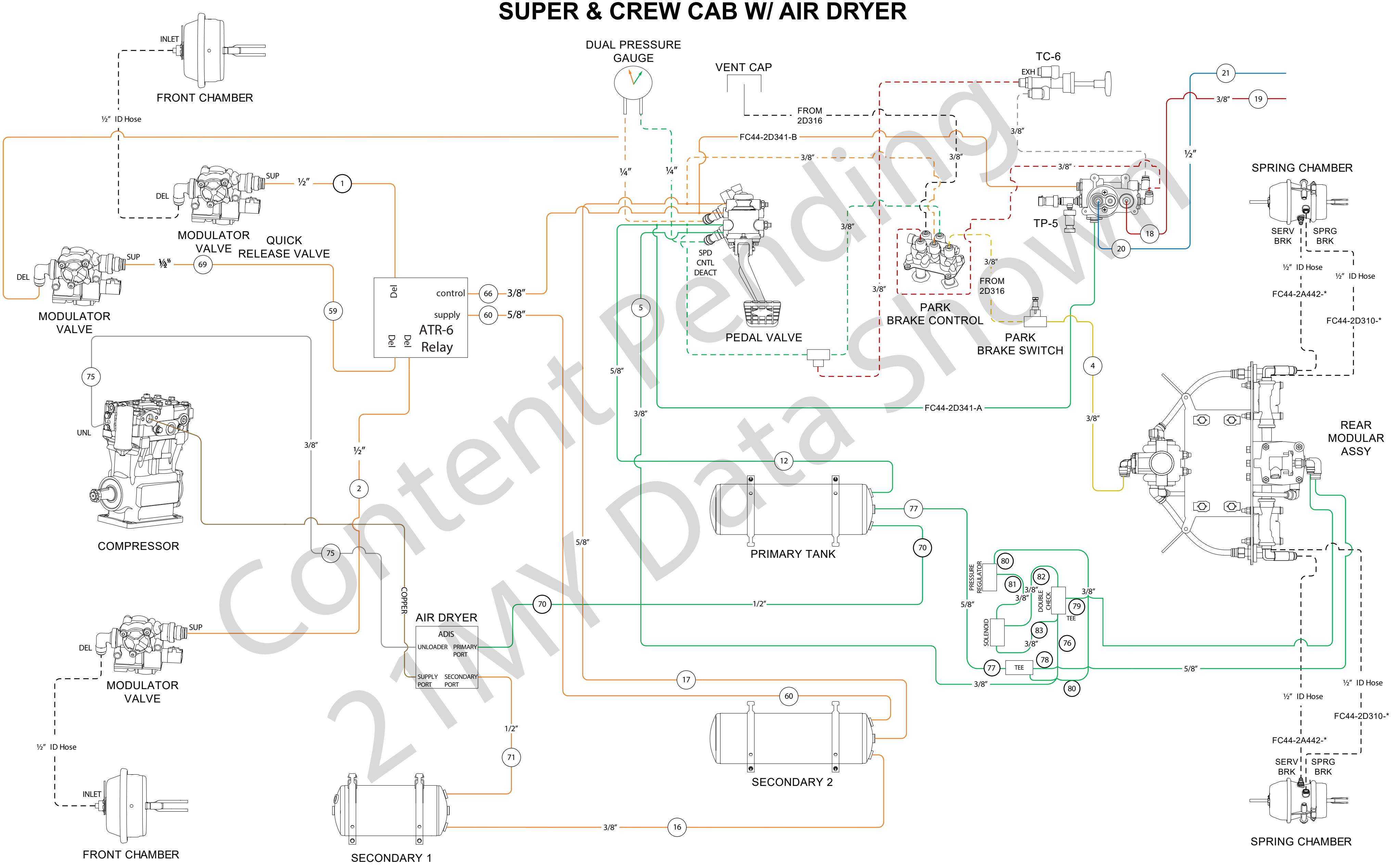
F650/750 SUPER DUTY
TRACTOR TRUCK AIR BRAKE SCHEMATIC
REGULAR CAB W/ AIR DRYER


INLET
FRONT CHAMBER
½″ ID Hose
DUAL PRESSURE GAUGE
VENT CAP
FROM 2D316
TC-6
EXH
JC44-2D341-B
¼″
¼″
3/8″
3/8″
3/8″
3/8″
21
19
3/8″
½″
SPRING CHAMBER
SUP
½″
1
DEL
MODULATOR VALVE
QUICK RELEASE VALVE
TP-5
18
20
SERV BRK
SPRG BRK
½″ ID Hose
½″ ID Hose
FC44-2A442-*
FC44-2D310-*
SUP
½″
69
DEL
MODULATOR VALVE
3/8″
66
Del
control
supply
ATR-6 Relay
Del
Del
59
SPD CNTL DEACT
3/8″
3/8″
5
PEDAL VALVE
PARK BRAKE CONTROL
3/8″
FROM 2D316
PARK BRAKE SWITCH
4
75
UNL
COMPRESSOR
3/8″
½″
2
5/8″
3/8″
FC44-2D341-A
3/8″
12
REAR MODULAR ASSY
PRIMARY TANK
1/2″
75
70
COPPER
80
Pressure Regulator
81
82
Double Check
Double Check
3/8″
3/8″
79
76
77
5/8″
Solenoid
83
3/8″
Tee
77
80
78
5/8″
AIR DRYER
DRYER
UNLOADER
PRIMARY PORT
CTL
SUPPLY PORT
SECONDARY PORT
SUP
5/8″
60
SUP
DEL
MODULATOR VALVE
½″ ID Hose
½″ ID Hose
FC44-2D310-*
FC44-2A442-*
SERV BRK
SPRG BRK
½″ ID Hose
10
1/2″
71
SECONDARY TANK
INLET
SPRING CHAMBER

Content Pending
21MY Data Shown

NOTES — [ ] DIMENSIONS ARE INCHES.

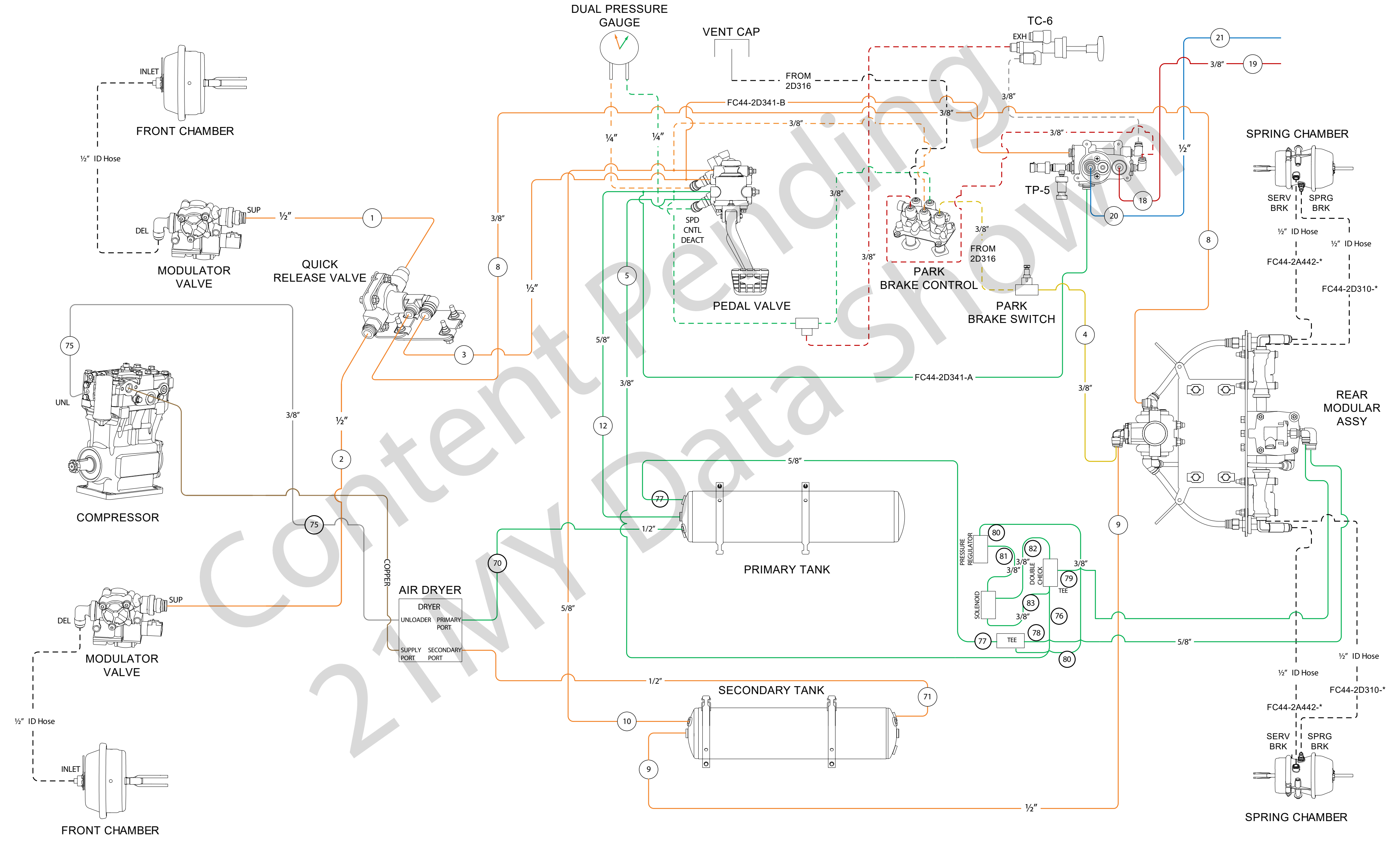
F650/750 SUPER DUTY
TRACTOR AIR BRAKE SCHEMATIC
SUPER & CREW CAB W/ AIR DRYER


INLET
FRONT CHAMBER
½" ID Hose
DUAL PRESSURE GAUGE
¼"
¼"
VENT CAP
FROM 2D316
FC44-2D341-B
3/8"
3/8"
3/8"
TC-6
EXH
3/8"
21
19
3/8"
½"
SPRING CHAMBER
SUP
½"
1
DEL
MODULATOR VALVE
QUICK RELEASE VALVE
SUP
½"
69
DEL
MODULATOR VALVE
59
Del
control
66
3/8"
supply
60
5/8"
ATR-6 Relay
Del
Del
SPD CNTL DEACT
3/8"
5
PEDAL VALVE
3/8"
PARK BRAKE CONTROL
3/8"
FROM 2D316
PARK BRAKE SWITCH
TP-5
18
20
SERV BRK
SPRG BRK
½" ID Hose
½" ID Hose
FC44-2A442-*
FC44-2D310-*
4
75
UNL
COMPRESSOR
3/8"
½"
2
5/8"
3/8"
FC44-2D341-A
3/8"
REAR MODULAR ASSY
12
PRIMARY TANK
77
70
75
COPPER
5/8"
AIR DRYER
ADIS
UNLOADER
PRIMARY PORT
SUPPLY PORT
SECONDARY PORT
70
1/2"
PRESSURE REGULATOR
80
81
82
3/8"
3/8"
DOUBLE CHECK
79
TEE
3/8"
5/8"
SOLENOID
83
3/8"
76
78
77
TEE
80
3/8"
5/8"
17
60
SUP
DEL
MODULATOR VALVE
½" ID Hose
INLET
FRONT CHAMBER
1/2"
71
SECONDARY 2
SECONDARY 1
3/8"
16
½" ID Hose
½" ID Hose
FC44-2D310-*
FC44-2A442-*
SERV BRK
SPRG BRK
SPRING CHAMBER

Content Pending
21MY Data Shown

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
STRAIGHT TRUCK W/TRAILER TOW AIR BRAKE SCHEMATIC
REGULAR CAB W/ AIR DRYER

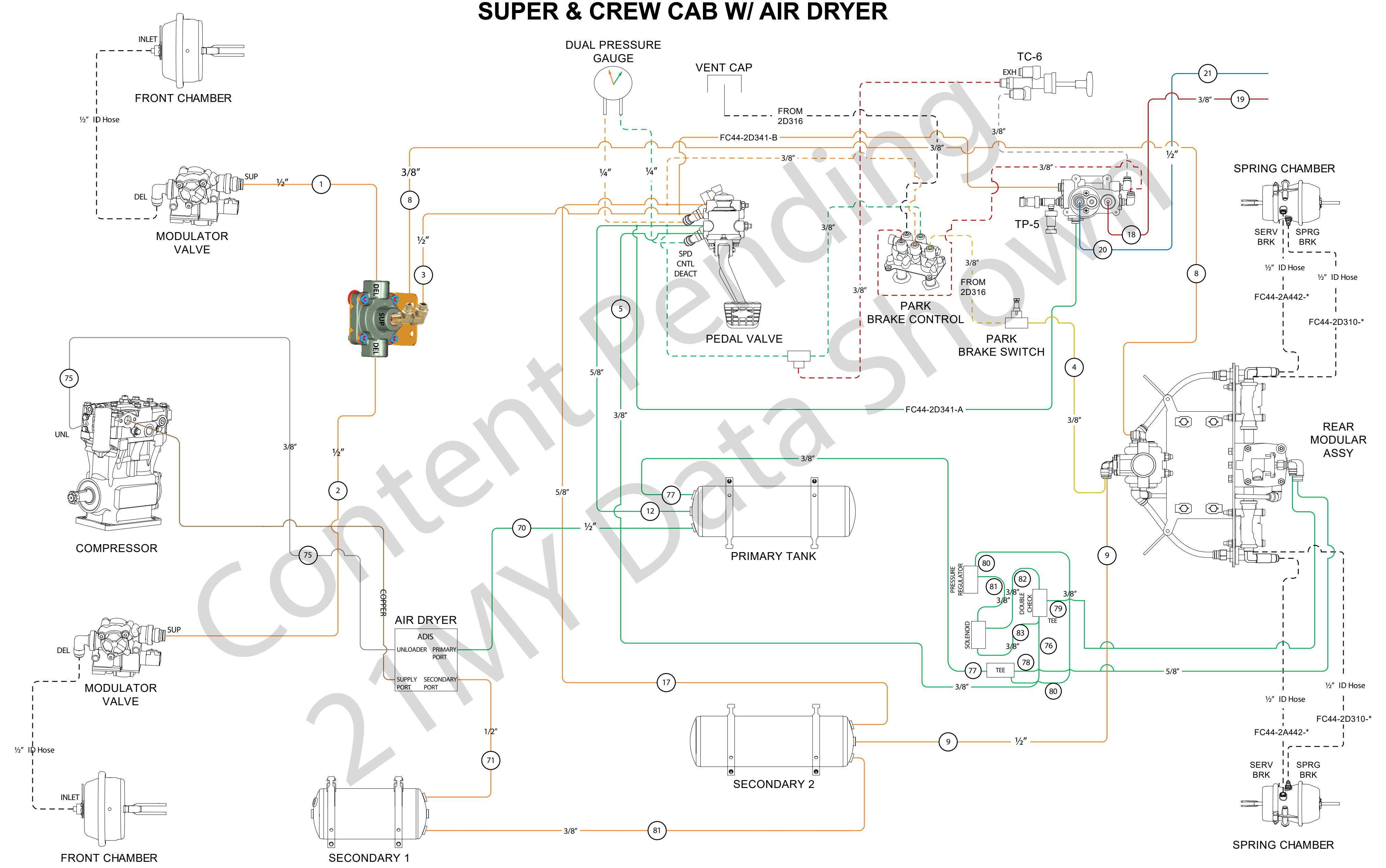

DUAL PRESSURE GAUGE
VENT CAP
TC-6
EXH
FROM 2D316
FC44-2D341-B
3/8″
1/4″
1/2″
5/8″
21
19
18
20
TP-5
SPRING CHAMBER
SERV BRK
SPRG BRK
½″ ID Hose
FC44-2A442-*
FC44-2D310-*
INLET
FRONT CHAMBER
SUP
DEL
MODULATOR VALVE
QUICK RELEASE VALVE
1
2
3
4
5
8
9
10
12
SPD CNTL DEACT
PEDAL VALVE
PARK BRAKE CONTROL
PARK BRAKE SWITCH
FC44-2D341-A
REAR MODULAR ASSY
75
UNL
COMPRESSOR
COPPER
AIR DRYER
DRYER
UNLOADER
PRIMARY PORT
SUPPLY PORT
SECONDARY PORT
70
71
77
PRIMARY TANK
SECONDARY TANK
PRESSURE REGULATOR
SOLENOID
DOUBLE CHECK
TEE
76
78
79
80
81
82
83

NOTES — [ ] DIMENSIONS ARE INCHES.

Content Pending 21MY Data Shown

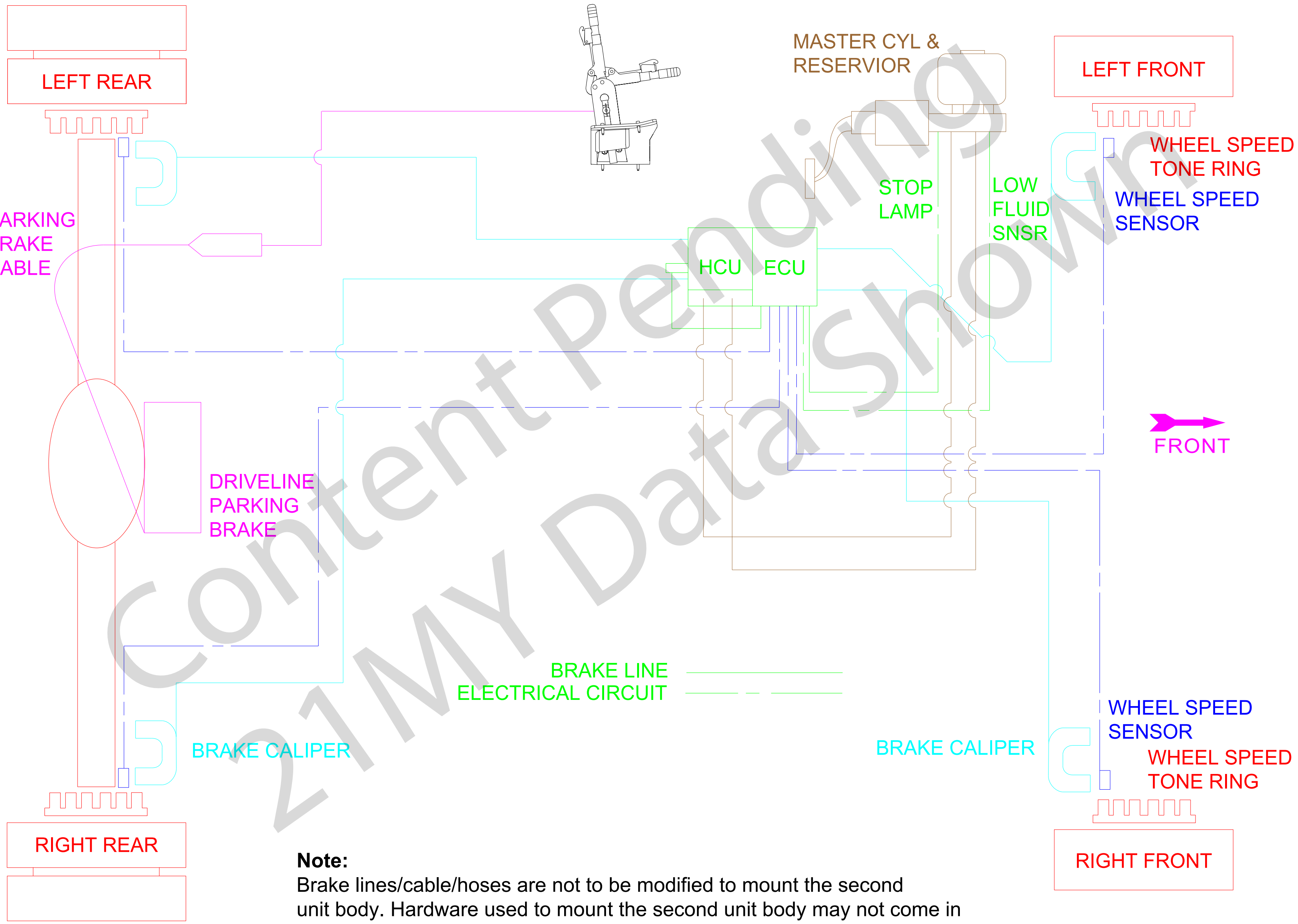
F650/750 SUPER DUTY
STRAIGHT TRUCK W/TRAILER TOW AIR BRAKE SCHEMATIC
SUPER & CREW CAB W/ AIR DRYER

Content Pending
21MY Data Shown


INLET
FRONT CHAMBER
½" ID Hose
SUP
DEL
½"
MODULATOR VALVE
1
8
3/8"
½"
3
DEL
SUP
DEL
DUAL PRESSURE GAUGE
VENT CAP
FROM 2D316
FC44-2D341-B
3/8"
¼"
¼"
SPD CNTL DEACT
PEDAL VALVE
5
TC-6
EXH
3/8"
3/8"
3/8"
3/8"
3/8"
3/8"
PARK BRAKE CONTROL
FROM 2D316
TP-5
PARK BRAKE SWITCH
21
19
3/8"
½"
18
20
SPRING CHAMBER
SERV BRK
SPRG BRK
½" ID Hose
½" ID Hose
FC44-2A442-*
FC44-2D310-*
8
4
75
UNL
COMPRESSOR
3/8"
½"
2
75
5/8"
3/8"
FC44-2D341-A
3/8"
3/8"
77
12
PRIMARY TANK
70
½"
5/8"
REAR MODULAR ASSY
9
COPPER
AIR DRYER
ADIS
UNLOADER
PRIMARY PORT
SUPPLY PORT
SECONDARY PORT
SUP
DEL
MODULATOR VALVE
½" ID Hose
INLET
FRONT CHAMBER
1/2"
71
17
SECONDARY 2
9
½"
SECONDARY 1
3/8"
81
80
PRESSURE REGULATOR
81
82
3/8"
3/8"
DOUBLE CHECK
79
TEE
3/8"
SOLENOID
83
3/8"
76
78
77
TEE
3/8"
80
5/8"
½" ID Hose
½" ID Hose
FC44-2D310-*
FC44-2A442-*
SERV BRK
SPRG BRK
SPRING CHAMBER

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
HYDRAULIC BRAKE SYSTEM
HYDRAULIC BRAKE SCHEMATIC

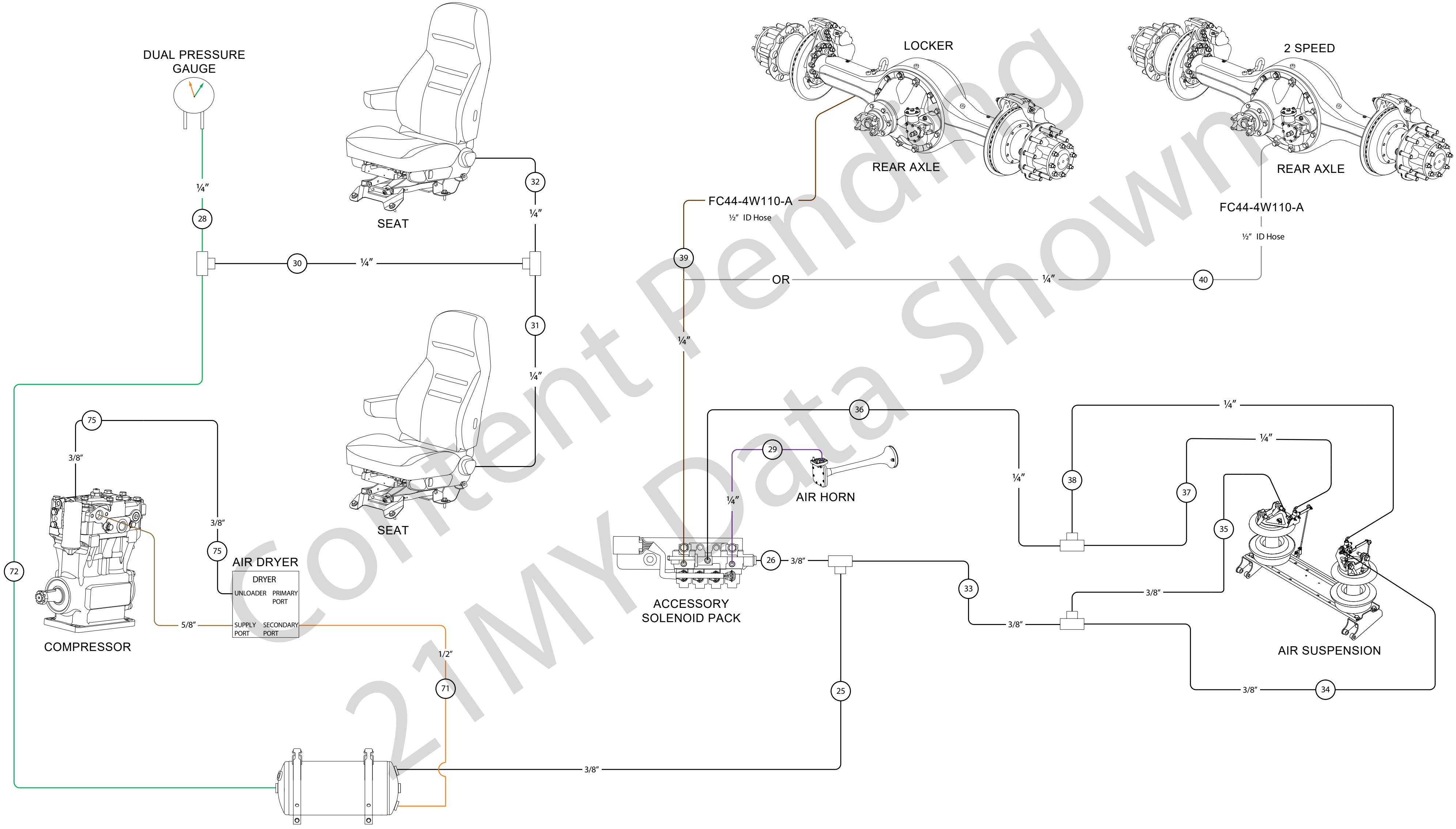

LEFT REAR
PARKING BRAKE CABLE
DRIVELINE PARKING BRAKE
MASTER CYL & RESERVIOR
STOP LAMP
LOW FLUID SNSR
HCU
ECU
LEFT FRONT
WHEEL SPEED TONE RING
WHEEL SPEED SENSOR
FRONT
BRAKE LINE
ELECTRICAL CIRCUIT
BRAKE CALIPER
BRAKE CALIPER
WHEEL SPEED SENSOR
WHEEL SPEED TONE RING
RIGHT REAR
RIGHT FRONT

Content Pending
21MY Data Shown

Note:
Brake lines/cable/hoses are not to be modified to mount the second unit body. Hardware used to mount the second unit body may not come in contact with any brake line/cable/hose.

NOTES — [ ] DIMENSIONS ARE INCHES.

F650/750 SUPER DUTY
AIR ACCESSORIES SCHEMATIC W/AIR DRYERCOMPRESSOR


DUAL PRESSURE GAUGE
¼″
28
30
¼″
SEAT
32
¼″
31
¼″
SEAT
LOCKER
REAR AXLE
FC44-4W110-A
½″ ID Hose
39
¼″
OR
¼″
40
2 SPEED
REAR AXLE
FC44-4W110-A
½″ ID Hose
75
3/8″
3/8″
75
COMPRESSOR
72
AIR DRYER
DRYER
UNLOADER
PRIMARY PORT
SUPPLY PORT
SECONDARY PORT
5/8″
1/2″
71
3/8″
36
29
¼″
AIR HORN
ACCESSORY SOLENOID PACK
26
3/8″
25
33
3/8″
¼″
38
¼″
37
¼″
35
3/8″
AIR SUSPENSION
3/8″
34

Content Pending 21MY Data Shown

NOTES — [ ] DIMENSIONS ARE INCHES.

CHANGE CONTROL INDEX

LTRS	REVISIONS		
ORIGINATOR	CHECKER	ENGR APP	MATL APP
INITIAL RELEASE CHNC44-1B347-AA-97-FNA-ECN/3 RELEASED 20220222			
KVINOTH4	RWAGNE43	SLAZARZ	--